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DISEASES CAUSED BY BACTERIA AND FUNGI

AMSTERDAM, D. & SCHNEIERSON, S. S. (1957). **Relationship between penicillin susceptibility and virulence of** *Staphylococcus aureus*. — *Proc. Soc. exp. Biol., N.Y.* **96**, 750-752. [Authors' summary modified.] **1301**

No distinct correlation was established between penicillin susceptibility and virulence of 80 coagulase-positive, haemolytic, mannitol fermenting strains of *Staph. aureus*. Both penicillin-resistant and penicillin-sensitive strains vary considerably in their pathogenicity for mice, but a significantly higher proportion of the former proved to be virulent as compared to the latter which were fairly evenly divided between virulent and avirulent strains. No definite pattern in respect of change in virulence was observed with 4 originally penicillin-sensitive strains after artificial induction of resistance to penicillin.

SCHWAB, J. H. & CROMARTIE, W. J. (1957). **Studies on a toxic cellular component of group A streptococci.**—*J. Bact.* **74**, 673-679. [Authors' summary modified.] **1302**

Remittent multinodular lesions of dermal connective tissue developed in rabbits following a single intradermal injection of a soluble extract of Group A streptococcal cells subjected to sonic vibration. Extracts of streptococci other than Group A, prepared in a similar manner, failed to induce this type of lesion. The activity of the toxic material was markedly reduced by a temp. of 100°C. for 5 min. and appeared to be modified by combination with antiserum. It seems likely that further characterization of this toxic material may be a useful approach to the study of the mechanism of tissue damage in Group A streptococcal infections.

JORDAN, W. J. (1957). **The use of proteolytic enzymes in mastitis in dairy cattle.**—*Vet. Rec.* **69**, 1452-1453. [Author's summary copied *verbatim*.] **1303**

Streptokinase-streptodornase, papain, crystalline trypsin, and stabilised crystalline trypsin were used in the treatment of mastitis in dairy cattle which had resisted a course of antibiotic treatment. Streptokinase-streptodornase improved 2 out of 6 summer mastitis cases treated. Papain had no noticeable effect. Crystalline trypsin was found a most useful therapeutic agent.

RUTQVIST, A. L. & SWAHN, O. (1957). Epizootologiska och bakteriologiska undersökningar vid mjältbrandsepizootien i Sverige 1956-1957. **[Epidemiological and bacteriological study of the 1956-57 epidemic of anthrax in Sweden.]**—*Nord. VetMed.* **9**, 641-663. [In Swedish. English and German summaries. English summary modified.] **1304**

A brief account is given of the incidence of anthrax in Sweden from 1900 to 1956 and an epizootic caused by imported meat meal involving 68 reported outbreaks among pigs with 72 deaths, mainly in Halland county, is described. During the epizootic period (1st Nov. 1956–31st March 1957), 19 outbreaks among cattle with 19 deaths were also reported. During the bacteriological examination of 506 meat-meal and 9 bone-meal samples representing the supplies of these products in the country at the time, the presence of *B. anthracis* was demonstrated in 45 samples of meat-meal, *i.e.*, 8·7% of those examined. In 137 samples including one of bone meal and representing 26·6% of those examined, *Salmonella* organisms were demonstrable. These belonged to 32 different serotypes of which two, *S. haelsingborg* and *S. halmstad*, had not been described previously.

MARCHETTE, N. J., LUNDGREN, D. L. & SMART, K. L. (1957). **Intracutaneous anthrax infection in wild rodents.**—*J. infect. Dis.* **101**, 148-153. [Authors' summary modified.] **1305**

An inoculum of 80 virulent *Bacillus anthracis* spores caused the death of *Peromyscus maniculatus, P. crinitus, P. truei, Reithrodontomys megalotis, Neotoma lepida, Perognathus*

formosus, Perognathus parvus and *Citellus leucurus*. Kangaroo rats (*Dipodomys ordii* and *D. microps*) were resistant to 40,000 spores. The exact degree of susceptibility could not be established for the cliff chipmunk (*Eutamias dorsalis*) and the grasshopper mouse (*Onychomys leucogaster*) because of the limited number available; they appeared to be of intermediate susceptibility between the very susceptible small mice and the more resistant kangaroo rats.

SOKOL, A. (1957). Použitelnosť živej adsorbátovej akapsulárnej vakcíny proti sneti slezinovej u oviec. **[Use of adsorbed live vaccine against anthrax in sheep.]**—*Vet. Čas.* **6**, 305-314. [In Slovak. English, French, German and Russian summaries.] **1306**

S. described an aluminium hydroxide vaccine against anthrax in sheep, prepared from a non-capsulated variant of *B. anthracis*. The immunogenic quality of this vaccine was tested in seven adult sheep, three lambs and two goats, which reacted to subsequent challenge with a fully virulent strain with a mild rise in temperature. Unvaccinated controls died within 2–3 days. The vaccine was well tolerated and apart from local swelling at the site of injection there was no clinical reaction.—E.G.

I. KOLESOV, S. G. & MIKHAILOV, N. A. (1956). **[Trial of aluminium hydroxide anthrax vaccine under field conditions.]**—*Trud. gosud. nauchno-kontrol. Inst. po Vetpreparatam* **6**, 242-249. [In Russian.] **1307**

II. KOLESOV, S. G. & MIKHAILOV, N. A. (1956). **[Immunogenic properties of aluminium hydroxide anthrax vaccine, and results of large-scale trials.]** — *Ibid.* 250-255. [In Russian.] **1308**

III. KOLESOV, S. G., MIKHAILOV, N. A. & BORISOVICH, Y. F. (1957). **[Aluminium hydroxide vaccine against anthrax.]**—*Veterinariya, Moscow* **34**, No. 10. pp. 39-45. [In Russian.] **1309**

I. & II. The authors found a strain of *B. anthracis* (Strain Sh-15) which was of low virulence for animals and had good immunizing properties. Spore formation was best on a meat broth medium containing 25–50% pea extract and 0·1% agar. Vaccine prepared from this strain contained 47 million spores/ml. with aluminium hydroxide and 20% glycerol. Preliminary tests indicated that the vaccine was safe for young and adult sheep and goats; immunity was present 7 days after inoculation and persisted for at least 6½ months. The vaccine was given by s/c inj. in doses of 1 ml. for cattle, 0·75 ml. for horses, 0·5 ml. for sheep, 0·3 ml. for goats and 0·5 ml. for pigs (approx. half doses for all young animals). In field trials in 1954, in which 655,660 animals were inoculated, the results were stated to be better than those obtained by the use of "STI" vaccine or Tsenkovskii's second vaccine. There are no figures for anthrax incidence after vaccination.

III. A survey of results so far obtained by the use of vaccine prepared from Strain Sh-15 of *B. anthracis* [See I & II above.].—R.M.

ISOPESCU, I., STANCA, M., GRĂSOIU, G. & CORMUŞ, D. (1957). **[Sodium sulphate as adjuvant for anthrax vaccines.]**—*Anu. Inst. Serui Vaccin. Pasteur Bucuresti* **2**, 153-163. [In Roumanian. French, German and Russian summaries.] **1310**

Sodium sulphate in 10–15% soln. could be used to replace saponin in a glycerol vaccine prepared from a non-capsulated oedema-forming strain of *B. anthracis*.—R.M.

CHAPMAN, G. B. & ZWORYKIN, K. A. (1957). **Study of germinating *Bacillus cereus* spores employing television microscopy of living cells and electron microscopy of ultrathin sections.**—*J. Bact.* **74**, 126-132. **1311**

Photographs from the television screen illustrated the process of spore germination in a single microscope field over a period of 2½ hours; the method established a time basis for fixing specimens for ultra-thin sectioning and electron microscopy. The electron micrographs showed the wall of the young cell to be present in the mature spore, as the innermost of 3 spore coats; the 2 outer coats are lost in the germinating process. Considerable variation in the configurations of the nuclear material of the germinating spores was observed.—E.V.L.

NABHOLZ, A. (1957). Die Ursachen von Reinfektionen in tuberkulosefreien Beständen. **[Causes of re-infection in herds free from tuberculosis.]**—*Schweiz. Arch. Tierheilk.* **99**, 553-562. [English, French and Italian summaries.] **1312**

In the Canton of Zurich, declared free from bovine TB. in 1955, 604 cattle in 223 herds were positive to tuberculin tests between January 1956 and May 1957. As far as could be determined, the sources of the fresh reactions were, in order of importance, infected cattle undetected by skin tests, wild animals (deer and foxes), non-specific skin reactions, purchase of infected animals, contact with positive reactors during the eradication campaign, unpasteurized skim milk, infected human beings, cats, dogs and pigs, and, in one case, an auction.—M.G.G.

RANNEY, A. F. (1957). **Status of Federal-State cooperative tuberculosis eradication.**—*Proc. 60th Ann. Meet. U.S. live Stk sanit. Ass., Chicago*, 1956 pp. 163-169. **1313**

About a million more animals are now being tested annually than in 1946, but since the cattle population has increased from 82·2 million in 1946 to 97·4 million in 1956 the ratio of cattle tested to cattle population is less favourable than it was 10 years ago. In 1956 some 9,220,000 cattle were tested and 14,363 reactors found, which is 0·15%, a higher percentage than the 0·11 and 0·12% of previous years. The no-visible-lesion reactors in herds of unknown status or supposedly non-tuberculous herds are often not removed when found; they are frequently classed as "deviators" and ignored in the records. The Uniform methods and Rules are not being complied with in some States with regard to quarantine of herds containing NVL cases or reactors. Reactors found in dealers' herds or at slaughter are traced back to their original herd, so that it may be tested; this is often a difficult and expensive procedure which could be greatly simplified by full identification of animals.—E.V.L.

KOKURICHEV, P. I. & KARBAINOV, M. A. (1957). **[Specificity of the tuberculin test in cattle with fascioliasis.]** — *Sborn. nauch. Trud. Leningr. Inst. Usovershenst. vet. Vrach.* **11**, 81-85. [In Russian.] **1314**

Intradermal or ophthalmic tuberculin tests were performed on 160 slaughter cattle. From comparison of the test results with subsequent post-mortem findings there was no evidence that non-specific reactions to tuberculin were due to fascioliasis. [See also *V.B.* **24**, 324 and **27**, 1643.]—R.M.

OLSSON, S. -E. (1957). **On tuberculosis in the dog. A study with special reference to X-ray diagnosis.**—*Cornell Vet.* **47**, 193-219. **1315**

Literature on the incidence and clinical manifestations of TB. in the dog is reviewed and an account of 40 cases is given. Of these 35 were infected with the human type of organism and one with the bovine type; in the other four the type was not identified. Symptoms varied but they were mainly fatigue, loss of weight, anorexia, dyspnoea and cough. In 20 cases the main symptoms were associated with the thoracic cavity, in 9 with the abdominal cavity and in 4 with bones and joints. Radiological examination of the chest was made in 28 cases and lesions observed are described and discussed; importance of this diagnostic aid is stressed. Results of blood sedimentation rate and tuberculin test were not reliable.—T.E.G.R.

BERG, O. A. (1957). **The white blood cell picture in dogs. The value of differential counts of the white blood cells before and after injection of tuberculin.**—*Acta tuberc. scand.* **34**, 102-117. **1316**

Differential counts of white blood cells were performed before and after injection of tuberculin in 23 normal dogs, 16 dogs experimentally infected with TB., 4 with spontaneous TB., and 13 with chronic non-tuberculous diseases. Differential counts were found to be of little or no diagnostic value in TB.—R.M.

TILDEN, E. B. & WILLIAMSON, W. M. (1957). **Unusual tuberculous lesions in a wallaby.**—*J. Amer. vet. med. Ass.* **131**, 526-527. [Authors' summary modified.] **1317**

A tuberculous abscess in the spinal cord of a wallaby (*Macropus bennetti*) was found to be due to the avian type tubercle bacillus. Only a few reports of TB. in this type of animal were found in the literature. In the 3 cases in which the organism was cultured, 1 was of bovine type, the other 2 of avian type.

TERESHCHENKO, I. K. (1957). **[Tuberculosis in geese.]**—*Sborn. nauch. Trud. Leningr. Inst. Usovershenst. vet. Vrach.* **11**, 86-98. [In Russian.] **1318**

Of 765 geese on 10 farms, 232 reacted to the double i/d tuberculin test with avian type tuberculin. None of the reactors showed signs of infection but all had lesions consisting of well-demarcated nodules in the liver or in liver and intestine: generalized T.B. was rare.—R.M.

RATCLIFFE, H. L. & MERRICK, J. V. (1957). **Tuberculosis induced by droplet nuclei infection. Its developmental pattern in guinea pigs and rats in relation to dietary protein.**—*Amer. J. Path.* **33**, 1121-1135. [Authors' summary modified.] **1319**

Amounts of dietary protein did not influence susceptibility of either rats or g.pigs to infection by inhaled bacilli nor modify the progress of TB. of rats within 260 days. In g.pigs which inhaled the less virulent bacilli the developmental pattern of pulmonary lesions did not change within 180 days. However, secondary lesions at sites beyond the lungs healed more rapidly in animals on the higher levels of dietary protein. When g.pigs inhaled the more highly virulent bacilli the progress of the disease was not influ-

enced by the diets within 50 days. At 75 days and beyond, all lesions in g.pigs on the higher levels of dietary protein seemed to be healing, and even in animals on 6% protein only the lesions in the lungs continued to be active. It was concluded that dietary protein could be a critical factor in the development by g.pigs of effective resistance to TB. This required relatively prolonged interaction of host and virulent parasite, and apparently reflected the combined actions of monocytes and other factors which, presumably, were antibodies. The highly uniform response of g.pigs for upwards of 50 days after infection is further evidence against the concept of native or hereditary resistance.

PEIZER, L. R., CHAVES, A. D. & WIDELOCK, D. (1957). **The effects of early isoniazid treatment in experimental guinea pig tuberculosis.** —*Amer. Rev. Tuberc.* **76,** 732-751. [French and Spanish summaries. Abst. from authors' summary.] **1320**

Six groups of 60 guinea-pigs each were infected with virulent tubercle bacilli and were started on intensive isoniazid treatment either at the time of challenge or soon thereafter under various experimental conditions. Isoniazid did not prevent the development of TB., but was highly effective in controlling it. The results of early isoniazid treatment were profoundly influenced by the size of the infecting inoculum, the infection being most effectively controlled in animals which received the smaller of the two inocula used. Pretreatment had no appreciable advantage over treatment started simultaneously with infection. A delay of 14 days in starting treatment, however, had a decidedly unfavourable effect. In the animals massively inoculated, treatment for 6 weeks was definitely inferior to treatment for 12 weeks; treatment continued for 50 weeks had no outstanding advantage over that given for only 12 weeks. Treated g.pigs which survived a first infection demonstrated an increased immunity to a second challenge. The animals which were tuberculin positive at the time of re-infection showed appreciably more immunity than those tuberculin negative.

KNOX, R. & WOODROFFE, R. (1957). **Semi-solid agar media for rapid drug sensitivity tests on cultures of *Mycobacterium tuberculosis*.**—*J. gen. Microbiol.* **16,** 647-659. **1321**

Semi-solid agar media for the rapid culture of *Mycobacterium tuberculosis* [see *V.B.* **26,** 341] were found useful for studies on the sensitivity of cultures of this organism to isoniazid, streptomycin and *p*-aminosalicylic acid.

—T.E.G.R.

HOYT, A., DENNERLINE, R. L., MOORE, F. J. & SMITH, C. R. (1957). **Tubercle bacillus wax as an experimental vaccine against mouse tuberculosis.**—*Amer. Rev. Tuberc.* **76,** 752-760. [French and Spanish summaries. Authors' summary modified.] **1322**

Purified tubercle bacillus wax (Anderson, 1942–43), when dissolved in *n*-hexadecane and suspended in water, was a good immunizing agent against experimental TB. in mice. It was effective following either subcutaneous or intraperitoneal injection. The wax contained many solvent-extracted tubercle bacilli. It lost its immunizing power when most of these bacilli were removed by ultracentrifugation. Wax was a stable antigen and retained considerable immunizing potency after autoclaving. The immunizing powers of wax plus hexadecane and heat-killed B.C.G. plus hexadecane were similar.

SEVER, J. L. & YOUMANS, G. P. (1957). **The relation of oxygen tension to virulence of tubercle bacilli and to acquired resistance in tuberculosis.**—*J. infect. Dis.* **101,** 193-202. [Abst. from authors' summary.] **1323**

Acquired resistance to TB. may be due, at least in part, to the rapid migration of macrophages into tuberculous areas, causing local anoxia sufficient to inhibit the multiplication of tubercle bacilli. While other mechanisms of acquired resistance may exist, local tissue anoxia would in itself explain the increased resistance of normal mice given small infecting doses of tubercle bacilli as well as that of animals immunized with B.C.G.

FELDMAN, W. H., KARLSON, A. G. & HERRICK, J. F. (1957). *Mycobacterium ulcerans*. **Pathogenesis of infection in mice, including determination of dermal temperatures.**—*Amer. J. Path.* **33,** 1163-1179. [Authors' summary modified.] **1324**

To obtain information on the pathogenesis of infections with *Mycobact. ulcerans* in mice, different groups of animals were inoculated i/v into the tail vein, s/c into the tail, into the periosteum of the left femur, and intracerebrally. The duration of the experiment was 120 days. The most impressive features of the distribution of the lesions were the susceptibility of the soft structures of the tail and the rarity of lesions in the internal organs. In a few animals, acid-fast bacilli were observed within the caudal nerves, but there was no evidence that involvement of the nerves had

a role in the initial stages of the pathogenesis of the infection. Generalized infection was not observed. The pathogenesis of *M. ulcerans* infection was dependent to a considerable extent on the temperature of the area where the bacteria were introduced or eventually lodged. Consequently, a study was undertaken in normal mice to determine the temp. of the tail, in contrast to that of the rectum. The temp. of the tail was approx. 11° to 12°C. lower than the rectal temp. and approximated that of the external environment.

L'vov, N. M. (1958). **[Study of strains of *Mycobacterium johnei* isolated from farm animals.]**—*Veterinariya, Moscow* **35,** No. 1. pp. 87-91. [In Russian. English summary.] **1325**

Four strains, isolated from 3 cows and a camel, were cultured for five years. For primary isolation Dunkin's medium or an egg medium described by the author were most suitable. For subsequent cultivation the best results were obtained from the media described by Dunkin and Rinjard, or Sauton's or Vishnevski's media containing in addition pieces of cooked liver. L. studied the suitability of the strains as antigens for the complement-fixation and the intradermal tests.—**R.M.**

I. Tomescu, V., Oncioiu, P., Garp, N., Tibrea, S., Dohotaru, V., Constantinescu, C., Prelipceanu, G. & Totorcea, N. (1957). **[Observations on the hyperimmunization of horses against swine erysipelas.]**—*Anu. Inst. Serui Vaccin. Pasteur Bucuresti* **2,** 5-30. [In Roumanian. French, German and Russian summaries.] **1326**

II. Tomescu, V., Popescu, A., Jitaru, N., Dohotaru, V. & Constantinescu, C. (1957). **[Experimental preparation of swine erysipelas immune serum in pigs.]**—*Ibid.* 31-40. [In Roumanian. French, German and Russian summaries.] **1327**

I. The best anti-erysipelas serum was obtained by i/v injections of whole cultures of an immunogenic strain of *E. rhusiopathiae*. Losses amongst the horses used for this purpose were fairly high, but could be minimized by using young horses. A suitable method of assay was that which employed graded serum dilutions, in mice. The creation of a method using pigs would be advantageous.

II. The advantages and disadvantages of preparing swine erysipelas immune serum in pigs were discussed. It was recommended that at least part of the serum used in the field should in future be prepared from pigs.—R.M.

Nyström, G. (1957). Antibiotika och rödsjukeimmunitet. **[Antibiotics and immunity to swine erysipelas.]** — *Medlemsbl. Sverig. VetFörb.* **9,** 372 & 374. [In Swedish.] **1328**

In preliminary tests with a group of young mice fed antibiotics (100 g./ton of food) continuously from weaning and kept in isolation, the degree of immunity to severe challenge with virulent culture of *E. rhusiopathiae* (11, 6 and 5 days after vaccination) was as high as in a control group fed a normal diet.—F.E.W.

Goyon, M. & Lecomte, S. (1957). Avortement à *Listeria monocytogenes* chez la vache. **[Abortion caused by *E. monocytogenes* in a cow.]**—*Rec. Méd. vét.* **133,** 647-654. **1329**

Erysipelothrix (*Listeria*) *monocytogenes* was isolated from the aborted foetus of a cow, and 22 days later from the milk. A month previously most of the 8 cows in the herd had been severely ill, with 2 abortions. Examination of blood samples revealed distinct mononucleosis in 5 cows and agglutination titres for *E. monocytogenes* in 7. The organism has been isolated from hares, fowls, a pig and a duck in the district. Rodents are suggested as the source of this outbreak.—M.G.G.

Popov, V. I. (1957). **[Experimental airborne infection with listeria.]** — *Sborn. Rabot vsesoyuz. Inst. eksp. Vet.* pp. 95-105. [In Russian.] **1330**

Mice and g.pigs were very susceptible to infection by exposure to an aerosol of *Erysipelothrix* (*Listeria*) *monocytogenes*. Mice developed a clinical syndrome similar to that following oral or subcutaneous infection. Piglets also became ill following airborne infection, and the organism was isolated from the brain of one of them 75 days after clinical recovery.—R.M.

Osebold, J. W. & Sawyer, M. T. (1957). **Immunization studies on listeriosis in mice.**—*J. Immunol.* **78,** 262-268. **1331**

Hyperimmune serum from sheep and rabbits did not give passive protection to mice against *Erysipelothrix* (*Listeria*) *monocytogenes*. Active immunity, however, was demonstrated in mice given 2 sublethal doses of the organism in 10 days, and challenged 25 days later. The degree of immunity was not great; immunized mice withstood not more than 100 times the number of organisms fatal to controls. It is concluded that the mouse is useful for studying the effect of immunizing antigens from *E. monocytogenes*, but not for assaying the immune sera. —M.G.G.

RYFF, J. F. & GLENN, M. W. (1957). **Possible evidence of a viral agent in shipping fever complex of cattle.**—*J. Amer. vet. med. Ass.* **131**, 469-470. **1332**

Chicken and sheep r.b.c. were agglutinated by material harvested from the allantoic sacs of chick embryos inoculated with: nasal washings from a steer with acute respiratory infection following a change of diet; and, pleural exudate from an animal that had died from shipping fever (*Past. septica* was isolated from the lung tissue of this animal). This is considered as evidence of the presence of a virus in the allantoic sac material.—T.E.G.R.

MOVSESYAN, T. B. (1957). **[Pathology of acute spontaneous and experimental pasteurellosis in cattle. I. The nervous system in spontaneous infection. II. The nervous system in experimental infection.]**—*Izvest. Akad. Nauk Armyanskoi S.S.R.* **10**, No. 1. pp. 43-60; No. 8. pp. 65-71. [In Russian.] **1333**

M. examined the central nervous system of 14 cattle with spontaneous pasteurellosis and 20 cattle and 16 rabbits with experimental infection. Details are given of histological changes in the cerebral cortex, medulla oblongata, cerebellum, hippocampus, corpora quadrigemina, optic chiasm, pons and neuroglia; there are 22 photomicrographs. The author claimed to have established a relationship between lesions in the c.n.s. and lesions in the organs, which indicated that the c.n.s. played a role of regulator in the pathogenesis of the disease. The principal changes in the c.n.s. were those of severe dystrophy followed by death of nerve cells.—R.M.

UHERKO, J. (1957). Nález dyspeptických kmeňov *Escherichia coli* pri bakteriologickom vyšetrovaní mäsa. **[Occurrence of infantile enteritis strains of *E. coli* in meat.]**—*Vet. Čas.* **6**, 335-338. [In Slovak. English, French, German and Russian summaries.] **1334**

Serotypes O26:B6 and O111:B4 of strains of *Escherichia coli* which cause enteritis in infants were isolated from the liver, lymph nodes and muscles of three of 445 calves. Muscles and organs of 586 adult cattle were free from infection with these strains.—E.G.

LÖLIGER, H. -C. (1957). Die Pathogenese der sog. Samenstauung im Nebenhoden der Ziegenböcke. **[Pathogenesis of so-called "seminal retention" in the epididymis of goats.]**—*Zbl. VetMed.* **4**, 892-906. [English, French and Spanish summaries. English summary modified.] **1335**

Of 13 five-month-old kids in which orchitis and epididymitis were produced experimentally by *E. coli* 7 developed granulomas with giant cells in the epididymis. In 4 kids a diffuse purulent orchitis with necrosis and a diffuse epididymitis resulted in spermatic abscesses. Both in experimental and in spontaneous granulomas as well as in cases of purulent epididymitis with spermatic abscesses there were occasional inflammatory changes in the testicular coverings, mainly in the form of fibrinous periorchitic adhesions. Seminal retention in goats may be due to suppurative inflammation of the epididymis or to the formation of pericanalicular granulation tissue with lymphangiectatic spermatoceles and extra-canalicular accumulations of spermatozoa with the formation of giant cells. It is suggested that the "seminal retention" lesion in the epididymis, because of its histological structure and pathogenesis, should be designated either suppurative abscess-forming epididymitis or spermatic granuloma.

BRATANOVIĆ, U. E. & JAKŠIĆ, B. L. (1957). **[Gastro-enteritis in young piglets. I. *Escherichia coli* infection.]**—*Vet. Glasn.* **11**, 521-525. [In Serbian. English summary.] **1336**

Of 302 piglets up to 3 weeks of age 102 died within 10 days from gastro-enteritis caused by *E. coli*. In nearly all survivors there was inappetence, dulness, diarrhoea and anaemia. P.M. there was acute, often haemorrhagic, gastro-enteritis. Histologically there was hyperaemia in the adrenal medulla and in the reticular zone of the cortex, and perivascular haemorrhages. Eosinophilic leucocyte infiltrations were present in the intestinal and stomach walls. Recovery was spectacular following administration of chlortetracycline, iron and vitamins. It was considered that nutritional deficiency in the piglets due to inadequate diet of the dams favoured multiplication of *E. coli* in the gastro-intestinal tract.—E.G.

GROSS, W. B. (1957). **Pathological changes of an *Escherichia coli* infection in chickens and turkeys.** — *Amer. J. vet. Res.* **18**, 724-730. [Author's summary modified.] **1337**

Strains of *E. coli* isolated from fowls and turkeys produced aerosacculitis, fibrinous pericarditis, perihepatitis, salpingitis, and panophthalmitis in experimentally infected chicks. Natural infection was almost always in combination with chronic respiratory disease. Cellular infiltration consisted of heterophilic and mononuclear phagocytes in varying proportions. Necrotic areas were at first lined with mononuclear phagocytes and later with giant cells.

I. COLLARD, P. & SEN, R. (1956). **Isolation of salmonellae from cattle in Ibadan.** — *W. Afr. med. J.* **5,** 118-120. **1338**

II. SEN, R. & COLLARD, P. (1957). **Isolation of salmonellae from fowls in Ibadan.**—*Ibid.* **6,** 15-17. **1339**

III. SEN, R. & COLLARD, P. (1957). **Isolation of salmonellae from healthy pigs in Ibadan.** —*Ibid.* 64-67. **1340**

I. Examination for salmonella in mesenteric lymph nodes and faeces from 200 zebu cattle revealed a carrier rate of 5·5%. The types isolated were *S. typhi-murium, dublin, elizabethville, rubislav, oranienburg, monschaui* and *johannesburg*.

II. A faecal carrier rate of 4·5% was found among 200 apparently healthy fowls. Of nine types isolated, 4 were *S. hadar,* 2 were *S. bredeney* and the remainder were *S. africana, rubislav* and *edinburgh*. The isolation of *S. hadar* and *africana* from fowls had not, the authors believed, been reported before.

III. Examination of 119 healthy pigs revealed a carrier rate of 16%. The 3 types isolated were *S. poona, agama* and *livingstone;* the first type was the commonest.—R.M.

BØVRE, K. (1957). Latent salmonellainfeksjon hos slaktedyr i Norge. **[Latent salmonella infection in slaughter animals in Norway.]**—*Nord. VetMed.* **9,** 855-867. [In Norwegian. English and German summaries. Abst. from English summary.] **1341**

The mesenteric lymph nodes of 4,587 apparently normal slaughter animals (4114 pigs, 410 cattle, 13 calves and 50 sheep) in Oslo were examined for salmonella. *S. muenchen* was demonstrated in one of 10 pooled samples (each from 10 adult cattle). No salmonella were found in calves and sheep. Salmonella were found in 45 of 436 pooled samples from pigs. In material from 3770 pigs in 202 herds, salmonella were found in pigs from 27 herds. The frequency was highest in May and June. Signs of clinical salmonellosis were not found in the infected herds. The following types were isolated from pigs: *S. typhi-murium, enteritidis, muenchen, coeln, johannesburg, brandenburg, chester, derby* and *java*. The possibilities of infection through the feeding and the significance of imported vegetable feeding meals as cause of the presence of the (in Norway) rare salmonella types, were discussed.

GOERTTLER, V. & RICHTER, W. (1957). Salmonellenfunde in Thüringen 1945–1955. **[Salmonella isolated in Thuringia during 1945–55.]**—*Mh. VetMed.* **12,** 465-468. **1342**

Bacteriological examination of 140,000 samples of meat during this period yielded 735 strains of salmonella; 45% were *S. typhimurium,* 32% *S. enteritidis,* 4% *S. dublin,* and 3·5% *S. anatis;* 35% were isolated from calves, 26% from pigs, and 23% from cattle. August was the month with the highest incidence of infection.—M.G.G.

SUTMÖLLER, P. & KAMPELMACHER, E. H. (1957). Salmonella-infecties bij dieren op Aruba (Nederlandse Antillen). **[Salmonella infections of animals on Aruba (Netherlands Antilles).]** —*Tijdschr. Diergeneesk.* **82,** 291-301 & 351-356. [In Dutch. English, French, German and Spanish summaries.] **1343**

The authors examined for salmonella, faeces of cattle imported for slaughter from Santo Domingo, Costa Rica and Honduras, and goats from Colombia. 16 serological types of salmonella were isolated. [This paper was published in English in *Leeuwenhoek ned. Tijdschr.* **23,** 207–217 (1957).]—R.M.

THAL, E., RUTQVIST, L. & HOLMQVIST, H. (1957). **Salmonella isolated from animals in Sweden during the years 1949 to 1956.** — *Nord. VetMed.* **9,** 822-830. [In English. German and Swedish summaries. English summary modified.] **1344**

60,854 examinations for salmonella were carried out on 59,386 animals of various species and 1,468 feed samples, mainly products of animal origin. Of the 805 salmonella strains isolated, 776 originated from animals (1·03% of the animals examined) and 29 from feeding stuffs (2% of the samples examined). Four salmonella types represented 91% of the strains isolated: *S. pullorum* (34%), *S. typhi-murium* (27%), *S. cholerae-suis* var. *kunzendorf* (23%), and *S. dublin* (7%). The incidence apart from that of *S. pullorum* in young fowls and chicks seems to have increased during recent years. Salmonella types isolated from a number of cases were ones hitherto rarely found in Sweden and in some cases were identical with the types isolated from feed samples.

WINKLE, S. & ROHDE, R. (1957). Über die Gefahr des bakteriologisch unkontrollierten Importes ausländischer Tierfuttermittel mit besonderer Berücksichtigung der Schweinezucht. **[Danger of importing animal foods without bacteriological examination, with special reference to pig foods.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 443-444. **1345**

Salmonella which have caused the sharp increase in outbreaks of food poisoning in

Germany since 1953 are of the same types found in fish meal imported from West Africa and South America. Much of this is contaminated with salmonella, particularly that from Angola of which about 70% of samples are infected.
—M.G.G.

BURR, W. E., TOURTELLOTTE, M., LUGINBUHL, R. E. & JUNGHERR, E. L. (1957). *Salmonella heidelberg* **infection as a problem in pullorum disease control.**—*Avian Diseases* **1,** 298-304. [Authors' summary modified.] **1346**

S. heidelberg was found to be a problem in the Connecticut pullorum-typhoid eradication programme when 30 isolations were made from "pullorum reactors" and three isolations from chicks, all traced to a single breeding stock. Isolations were also made from a ranch mink fed culled chicks, and a gray fox. Egg transmission and faecal contamination in artificially infected birds were demonstrated. Rises in antibody level for *S. heidelberg* and *S. pullorum* were obtained following oral and intraperitoneal inoculation with *S. heidelberg*. Results indicated that infection with *S. heidelberg* caused cross reactions in the standard pullorum agglutination test.

SEDLMEIER, H., KOTTER, L. & TERPLAN, G. (1957). Zum Vorkommen von nicht hühnerspezifischen Salmonellen bei Hühnern. **[Occurrence in hens of salmonella species other than *S. pullorum* and *S. gallinarum*.]** —*Berl. Münch. tierärztl. Wschr.* **70,** 433-435. [English summary.] **1347**

A review of the literature revealed that, besides *S. pullorum* and *S. gallinarum*, no less than 46 salmonella species have been isolated from chicks and fowls, most of them pathogenic for man. It is suggested that such infections are often diagnosed as *S. pullorum* or *S. gallinarum* infection. Stricter measures are required to protect the public from salmonella infection in fowls and eggs.—M.G.G.

TELLO GARUST, A. & COLICHÓN, J. (1957). Paratifosis en pollitos ocasionada por *Salmonella saint paul*. [*Salmonella saint-paul* **infection in chicks.**]—*Rev. Fac. Med. vet., Lima* **7-11,** 193-195. [English summary modified.] **1348**

A description of paratyphoid in a flock of 485 New Hampshire chicks with a mortality rate of 19·17%. *S. saint-paul* was isolated as the cause of the outbreak.

SIEBURTH, J. McN. (1957). **Indirect hemagglutination studies on salmonellosis of chickens:** —*J. Immunol.* **78,** 380-386. **1349**

Of 169 serum samples from a flock with *S. typhi-murium* infection 46% were positive to the tube agglutination test, and 66% to the indirect haemagglutination test, using r.b.c. modified by 4 salmonella serotypes. The capacity of the indirect haemagglutination test to be polyvalent without loss of sensitivity indicates that it could replace the tube agglutination test. [See also *V.B.* **27,** 1684.]—M.G.G.

TILGNER, K., NEUMANN, H.-J. & KAHLCKE, A. (1957). Reichweite und Treffsicherheit der Meinicke-Flockungsreaktion und der Blutserum-ABR sowie Kritik des Beurteilungsschlüssels in bang-schutzgeimpften Rinderbeständen. **[Reliability of the flocculation test and the serum ring test in herds immunized against brucellosis.]**—*Tierärztl. Umsch.* **12,** 346-350. **1350**

Persistent titres to the slow serum agglutination test and to the flocculation test have been observed in herds vaccinated with live *Br. abortus* vaccines. Some animals are positive to both tests and others to one only. Of 1793 blood sera obtained from such herds 3% were positive to the flocculation test while having titres of less than 1:20 to the agglutination test, and 1% were negative to the flocculation test while having titres of 1:80 and over to the agglutination test. A similar trial of the blood serum ring test showed that it agreed with the agglutination test when this was positive or negative, but when this was doubtful, the ring test was also doubtful. It is considered that the flocculation test should not be used to resolve doubtful agglutination titres in vaccinated herds; a second agglutination test, 6–8 weeks later, is recommended instead. The ring test with blood serum is also considered unsuitable for vaccinated herds. It is recommended that agglutination titres of 1:20 and 1:40 in vaccinated herds should be regarded as negative.—M.G.G.

KUNTER, E. (1957). Untersuchung von Blutseren auf Abortus Bang mit der Kuppenreaktion unter Verwendung eines mit 2-, 3-, 5-Triphenyltetrazoliumchlorid nach Bendtsen gefärbten Bang-Antigens. **[Examination of sera for brucellosis using tetrazolium-stained antigen.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 186-190. [English summary.] **1351**

The "dome test" (Kuppenreaktion) for blood serum was described by Fleischhauer in 1939 [*Berl. Münch. tierärztl. Wschr.* p. 399]. A mixture of serum, saline and stained antigen was heated at 37°C. for 15 min., then centrifuged at 1,000 r.p.m. for 3 min. The tube was then inverted, and the formation of a compact button of deposit was regarded as a positive reaction.

K. used antigen stained with triphenyltetrazolium chloride instead of haematoxylin, and compared the test with the agglutination test. He suggested that the test would save time in screening blood samples for brucellosis; a negative result would be accepted, but a positive result would have to be confirmed by the agglutination test.—R.M.

ROUX, L. (1957). Cultures mixtes du bacille de Bang et du bacille de Koch. **[Mixed cultures of *Br. abortus* and *M. tuberculosis*.]** — *Schweiz. Arch. Tierheilk.* **99,** 188-191. [In French. English, German and Italian summaries.] **1352**

Mixed cultures were obtained by sowing a Petragnani tube with an old culture of *Mycobact. tuberculosis* and a 48 hour culture of a Weybridge strain of *Br. abortus*. These were maintained for 2 years by subculture.

—T.E.G.R.

BÜRKI, F. (1957). Über Immunantikörper gegen Brucella abortus im Blutserum von Rindern, Möglichkeiten zu ihrem Nachweis und ihre klinische Bewertung. Gleichzeitig ein Beitrag zur Differenzierung von Impftitern und Infektionstitern. **[Immune antibodies to *Brucella abortus* in the serum of cattle, their demonstration, clinical significance and differentiation between vaccination and infection titres.]**—*Zbl. VetMed.* **4,** 833-870. [English, French and Spanish summaries. Abst. from English summary.] **1353**

Infected, uninfected and vaccinated (Strain 19) cattle were examined for antibody titres to *Br. abortus* by 4 serological methods. These were, in order of sensitivity, the indirect Coombs test described by Bürki & Fey [see *V.B.* **24,** 3999], the slow serum agglutination test, the author's c.f. test, and the precipitation test described by Bürki & Mosimann [see *V.B.* **27,** 1987]. The methods vary in their suitability. Where no agglutinogenic vaccines and no allergic tests with active antigens are used, the slow serum agglutination is considered the most suitable; it could be supplemented by the indirect Coombs test, but because of technical difficulties this should be confined to special cases. The indirect Coombs test detected infection in certain animals negative to the slow agglutination test (aborting animals), and could also clarify cases where an animal was suspected because of normal agglutinins. Where vaccination with Strain 19 is carried out, the c.f. and precipitation test will differentiate in many cases between vaccination and infection titres, while the serum agglutination test cannot. Both these tests are more selective than the agglutination and are positive with infected animals mainly (c.f.) or exclusively (precipitation). In young animals inoculated with 30 to 50×10^9 Strain 19 organisms no precipitins were detected in the serum; c.f. titres were always low, and after 20 weeks negative.

SACKMANN, W. (1957). Über farbstoffempfindliche Brucellastämme vom Br. abortus-Typ II (Wilson, Huddleson) aus Kuhmilch. **[Dye-sensitive strains of *Br. abortus* Type II from cow's milk.]**—*Zbl. VetMed.* **4,** 821-832 [English, French and Spanish summaries. English summary modified.] **1354**

In a culture medium containing Tween 40 but no dyes, milk from 51 cows yielded strains of *Br. abortus* belonging to Wilson Type II. Type II strains are sensitive to penicillin and can be divided, like Type I, into a CO_2-dependent and an aerobic group. They differ from Type I in being sensitive to basic fuchsin, crystal violet and Tween 20, and being less virulent for g.pigs. Like Type I they are sensitive to thionin, have moderate catalase activity and a similar epidemiological pattern.

MCDIARMID, A. & SUTHERLAND, F. B. (1957). **A comparison of the immunity produced in guinea-pigs by the inoculation of living, heat-killed and adjuvant vaccines prepared from *Br. abortus* Strains 45/20 and S. 19.**—*Vet. Rec.* **69,** 1067-1068 & 1069. [Authors' summary copied *verbatim*.] **1355**

A killed non-agglutinogenic adjuvant vaccine prepared from the rough strain 45/20 (McEwen) *Br. abortus* is capable of engendering considerable immunity in guinea-pigs in no way different from that obtained with the living strain; it is considered that this new antigen is well worthy of further trial as an immunising agent against brucellosis in adult cattle.

SERGEEV, V. A. (1957). **[Study of the filtrable form of brucella Strain 19.]**—*Sborn. Rabot vsesoyuz. Inst. eksp. Vet.* pp. 117-128. [In Russian.] **1356**

Filtrates of cultures of *Br. abortus* Strain 19 grown on meat–peptone–liver broth or potato agar yielded a filtrable form in only 5 out of 155 attempts. Better results were obtained when agar cultures were used, and when the cultures were suspended in normal saline at 24° to 26°C. for 2–4 days before filtration: regenerated secondary cultures were obtained from 20 out of 38 filtrates of suspensions. Most of the regenerated cultures were identical with the parent strain; some were less agglutinable.—R.M.

SCHOENAERS, F. & KAECKENBEECK, A. (1957). Vaccination antibrucellique chez la vache au moyen du vaccin M. (Huddleson). Troisième note. **[Immunization of cattle against brucellosis with Huddleson's mucoid vaccine. III.]**—*Ann. Méd. vét.* **101**, 424-433. **1357**

Further experiments with 39 heifers confirmed previous work with this vaccine [*V.B.* **26,** 1161]. Two inoculations at an interval of 4–6 months provided a weak immunity lasting for a few months. Although the vaccine might be useful for providing some immunity in adult cattle without causing the formation of persistent antibodies, it was not recommended for general use.—R.M.

YUSKOVETS, M. K. (1958). **[Fundamental achievements of veterinary science in brucellosis.]**—*Veterinariya, Moscow* **35,** No. 1. pp. 19-25. [In Russian.] **1358**

A review of Russian work. Two vaccines are at present used for cattle in the U.S.S.R., prepared from Strain 19 and *Br. abortus* Strain 68. For sheep, in addition to these two there are vaccines prepared from *Br. suis* Strain 61 and *Br. abortus* Strain 3 [see *V.B.* **26,** 746]. The number of premises infected with bovine brucellosis was reduced by 40% between 1952 and 1956. In 1957 it was estimated that 0·9–1% of all cattle and sheep were infected.

—R.M.

HUDDLESON, I. F. (1957). **Factors that promote the growth of brucella in the presence of blood.**—*Bull. World Hlth Org.* **16,** 929-938. [French summary. Author's synopsis modified.] **1359**

The data show that the growth of brucella cells in a mixture of culture medium (peptone type) and blood is not due to growth-promoting constituents in the medium but to an agent or agents that inactivate the growth-inhibiting factor in normal blood. The blood then becomes an excellent medium. Other methods of inactivating the growth-inhibiting factor are acidification of the culture medium to obtain a final pH of 6·0–6·2 after the addition of blood, and the addition of a cation exchange resin (H+) to blood alone. All types and species of brucella grew rapidly in ox, human, and horse blood after the addition of a cation exchange resin (H+). In the presence of salts in the blood, the resin behaved like an acid in lowering the pH to the desired level of 6·0–6·2. If conditions are created in a closed container (bottle), so that CO_2 is released from the $NaHCO_3$ in normal blood, other measures, *e.g.* the addition of CO_2, are not necessary for the growth of CO_2-dependent strains of *Br. abortus*.

MEYN, A., SCHMID, D. O. & SCHRINNER, E. J. (1957). Zur Frage der Erfassung und Charakterisierung der Dissoziationsformen von Brucella abortus. **[Recognition of dissociated forms of *Br. abortus*.]**—*Zbl. VetMed.* **4,** 933-944. [English, French and Spanish summaries. English summary modified.] **1360**

Numerous comparative tests have shown that the trypaflavine test introduced by Alessandrini & Sabatucci [*Ann. Igiene* **41,** 29] and Pampana [*Ibid.* p. 537] in 1931 is the only one capable of differentiating rapidly and surely the pure S-forms from the "pseudo-S-forms with R-character", as well as their intermediate and mixed forms. Contrary to all other forms, the pure S-forms in a trypaflavine solution (1 : 1000) do not agglutinate spontaneously.

MAHNKE, P.-F. & MOCHMANN, H. (1957). Untersuchungen über die Brucellose des Hausschweines. **[Brucellosis in domestic pigs.]** — *Berl. Münch. tierärztl. Wschr.* **70,** 405-408. [English summary.] **1361**

Of 1000 pigs slaughtered at Rostock 35 had agglutinins for brucella (22 for *Br. abortus,* 5 for *Br. melitensis,* 6 for *Br. suis* and 2 for all 3 serotypes). Histological examination of liver and kidneys revealed no specific changes.—M.G.G.

LEVINA, I. G. (1956). **[Endotoxins of brucella.]** — *Trud. gosud. nauchno-kontrol. Inst. po. Vetpreparatam* **6,** 157-170. [In Russian.] **1362**

L. tested the action on lab. animals of inactivated suspensions of the three main types of brucella, in which the organisms had been fragmented by shaking. S/c and i/d injection of such preparations or their ether extracts caused local necrosis and induced immunity to subsequent infection in only 1 out of 3 animals. Intraperitoneal injection was often fatal.—R.M.

IVANOV, M. M. & LEVINA, I. G. (1956). **[Study of the antigenic properties of brucella lysate and serological reactions in the diagnosis of ovine brucellosis.]**—*Trud. gosud. nauchno-kontrol. Inst. po. Vetpreparatam* **6,** 137-144. [In Russian.] **1363**

Brucella lysate prepared from *Br. suis* Strain 22 by the method described by Zdrodovskii [*V.B.* **7,** pp. 96–97] when injected several times into sheep did not cause the formation of agglutinins or complement-fixing substances, and did not sensitize the sheep. Brucella hydrolysate [described by D. A. Tsuverkalov & V. M. Krasov (1953)] was a weak allergen and did

not detect as many infected sheep as the c.f. test; it could not be recommended for the diagnosis of brucellosis in sheep. The most exact serological method was the c.f. test.—R.M.

MIKHAILOV, N. A. (1956). **[Practical possibilities of detecting latent brucellosis in sheep.]** — *Trud. gosud. nauchno-kontrol. Inst. po. Vetpreparatam* **6,** 144-157. [In Russian.] **1364**

From repeated tests on about 1,000 sheep in infected flocks, M. concluded that in infected sheep an allergic state was set up which in a high proportion of animals persisted after the disappearance of clinical signs and positive serological reactions. A large percentage of sheep which became negative to agglutination and c.f. tests after 11–13 months retained their reaction to a double intradermal or intravenous inoculation of brucella hydrolysate, but *Br. melitensis* was isolated from only 2 out of 17 such sheep. Nevertheless this double allergic test, in which the second injection was made 4–5 days after the first, was considered to be of value in detecting possible carriers of infection. It was believed that disappearance of positive reactions to the agglutination and c.f. tests indicated recovery from infection.—R.M.

MAGNUS, H. (1957). Morbus-Bang, eine grosse Gefahr für den Tierarzt. **[Brucellosis, a great danger for the veterinarian.]**—*Mh. VetMed.* **12,** 227-228. **1365**

Rubber gloves should be worn for dangerous work. In suspected cases diagnosis should be made as soon as possible, by repeated blood examinations and skin tests with a diagnostic allergen. A veterinary advice bureau should be created, to concern itself with this problem and to help veterinarians.—M.G.G.

WILLIAMS, T. P., ENTWISTLE, D. M. MASTERS, P. L. & WOODS, A. C. (1957). *Brucella suis* **infection of a child in Eire.** — *Lancet* December 14th, 1203-1204. **1366**

An organism, identified as *Br. suis* (American type) by its cultural and serological reactions, was isolated from a boy, aged 4 years, who became unwell after a stay of 2–3 weeks on a farm in the Republic of Ireland. The patient had drunk unheated milk from cows on the farm; another possible source of infection was the boy's father who, for a period, milked the cows. The pigs on the farm were home-reared and there was no known contact between them and the patient or his family. Investigations of the cows and pigs by the veterinary authorities yielded negative results.—T.E.G.R.

DAVIES, J. E. (1957). **Chronic brucellosis in general practice.**—*Brit. med. J.* November 9th, 1082-1087. [Author's summary modified.] **1367**

The essential clinical and laboratory features of cases of chronic brucellosis which occurred in a rural practice are described. 27 of 126 human beings reacted to the brucellin test. Single i/d inj. of brucellin in uninfected persons was followed by the appearance of antibodies in only a small number of cases. Such a rise, when it appeared, was not of high titre nor was it sustained. The possible disturbance of potassium metabolism resulting from the intracellular habitat of *Br. abortus* was discussed.

GOTTRON, H. A. (1957). Brucellose des Menschen in dermatologischer Sicht. **[Brucellosis in man from the dermatological aspect. A review.]**—*Dtsch. tierärztl. Wschr.* **64,** 240-244. **1368**

G. defined three types of skin trouble occurring in veterinary surgeons after contact with infected cattle, mainly by assistance at parturition, or removal of placenta:— erythema with urticaria occurring on the arm soon after contact, of brief duration; a nodular eruption commencing 1–3 days after contact; and infection through small skin wounds leading to regional lymphadenitis.—R.M.

KARAKAŠEVIĆ, B. (1957). Über Leptospirosen in Mazedonien (Jugoslawien). **[Leptospirosis in Macedonia.]**—*Zbl. Bakt. I. (Orig.)* **169,** 250-260. [English, French and Russian summaries.] **1369**

Surveys of herds and slaughter animals revealed leptospiral agglutinins at a titre of 1:100 or above in 61 of 144 cows, 17 of 76 calves, 59 of 109 buffaloes, 27 of 110 sheep and 21 of 78 pigs. K. gave the incidence of different species of *Leptospira* in each species.—R.M.

JACKSON, R. S., JONES, E. E. & CLARK, D. S. (1957). **Abortion in mares associated with leptospirosis.**—*J. Amer. vet. med. Ass.* **131,** 564-565. [Authors' summary modified.] **1370**

Three mares on one farm aborted between the 7th and 10th months of pregnancy. All were serologically positive for *Leptospira pomona*, two showing rising titres, after abortion. Spirochaetes, morphologically typical for leptospira, were observed by dark-field examination of abdominal fluid from one of the three foetuses (the only one delivered alive). Attempts to isolate the organism were unsuccessful.

BURNSTEIN, T., SCHEIDY, S. F., BRAMEL, R. G. & JENSEN, J. H. (1957). **Further**

studies with *Leptospira pomona* bacterin.—*Proc. 60th Ann. Meet. U.S. live Stk sanit. Ass., Chicago,* 1956 pp. 139-148. **1371**

Cattle vaccinated with 5 ml. killed culture of *L. pomona* were challenged in groups of 5, 5, and 10 at intervals of 6, 12, and 14 months respectively, having been kept in isolation over the whole period. There were no clinical signs of the disease and the antibody levels were little affected by the challenge inoculum. Controls developed a mild form of the disease and had titres above 1:10,000. Similar results were obtained in experiments on 37 young pigs, but many had a high titre following challenge while remaining immune clinically. This was because they had been challenged with an amount of antigen 5 times that of the dosage of the cattle if reckoned on a body weight basis; the immunity had thus been overwhelmed by the antigen, producing high titres. This action of excessive antigen was reproduced in experiments on g.pigs, confirming the unreliability, in leptospirosis, of evaluating immunity by serological data.—E.V.L.

FENNESTAD, K. L. & BORG-PETERSEN, C. (1957). ***Leptospira* antibody production by bovine foetuses.** — *Nature, Lond.* **180,** 1210-1211. **1372**

L. saxkoebing was injected into a placentome in 2 laparotomized cows which had been passively immunized against the strain. In their 3 calves (one cow had twins), killed at 7 or 9 days of age, interstitial cell infiltrations were found in the renal cortex and periportal tissue, but no leptospira. The titres of pre-colostral sera from the calves greatly exceeded those of the dams at any time, and rose steadily with age. The antibody activity was associated mainly with the γ_1-globulin fraction.—M.G.G.

MORSE, E. V., MORTER, R. L., LANGHAM, R. F., LUNDBERG, A. & ULLREY, D. E. (1957). **Experimental ovine leptospirosis, *Leptospira pomona* infection.**—*J. infect. Dis.* **101,** 129-136. [Authors' summary modified.] **1373**

Both bovine and porcine strains of *L. pomona* produced disease in sheep after s/c inoculation. Sheep may contract the infection from pigs. Hyperpyrexia, haemolytic anaemia and haemoglobinuria are severe manifestations of the disease. Icterus and lameness also occur. Haematological features include decreases in erythrocytes and haemoglobin. A mild leucocytosis may be observed while the differential leucocyte counts remain normal. Leptospiraemia is demonstrable on the 5th day and lasts until the 8th day after exposure. Meat from animals at this stage is a potential source of infection for man. The renal tissues contain leptospira by the 8th day and leptospiruria is demonstrable at 14 days. Sheep probably excrete the organism for not longer than 44 days; one animal, however, excreted leptospira in the urine for 62 days. Sheep probably play only a minor role in transmission of the disease. Healthy sheep, pigs, and goats did not become infected during 5 weeks' contact with infected sheep. Leptospira excrete only intermittently in the urine and the number is so low that dark-field examination is negative. It is postulated that leptospira contain a haemolytic endotoxin, or a substance which in the presence of specific antibody and complement will lyse erythrocytes *in vivo*.

VAN RIEL, J. & VAN RIEL, M. (1956). **Investigation into leptospirosis in goats and sheep in Central Africa.**—*Docum. Med. geogr. trop.* **8,** 55-60. [In English.] **1374**

Of 353 goat sera 12 were positive, to 5 serotypes, and of 72 sheep sera 3 were positive, to 3 serotypes.—M.G.G.

GILKA, F. (1957). Příspěvek k diagnostice Weilovy žloutenky selat. **[Diagnosis of leptospiral jaundice in piglets.]** — *Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **30,** 43-50. [In Czech. English, German and Russian summaries.] **1375**

An outbreak of jaundice was described in 21 piglets from four litters, 16 of which yielded positive agglutination – lysis reactions with *Leptospira icterohaemorrhagiae*. This organism was also isolated from the kidney of one piglet. Five died, in two of which there was focal proliferative nephritis, and the remainder recovered without treatment.—E.G.

HARTWIGK, H. & STOEBBE, E. (1957). Die Reaktionszeit und Verwendung von Tottesten bei der Agglutination-Lysis-Reaktion. **[Effect of reaction time and the use of dead antigen on the agglutination-lysis test for leptospirosis.]** — *Zbl. Bakt. I. (Orig.)* **169,** 260-268. [English, French and Russian summaries. English summary modified.] **1376**

The agglutination-lysis test required 24 hours of reaction time. An interval of 4 hours is not sufficient. The results should be read twice, after 4 and 24 hours, or once after 24 hours. Agglutination-lysis reactions with live and dead antigens had about the same results. The results with dead antigens were unequivocal and the risk of infection for the examiner was lowered. As with live antigens, the result should never be read before 24 hours.

BULLEN, J. J. & BATTEY, I. (1957). **Enterotoxaemia of sheep.**—*Vet. Rec.* **69,** No. 49. Pt. 2. pp. 1268-1273. Discussion: pp. 1273-1276. [Authors' summary copied *verbatim.*] **1377**

Enterotoxaemia is a common cause of death among sheep. The organism responsible for the disease, *Clostridium welchii* Type D, is a common inhabitant of the alimentary tract of normal animals. The disease cannot be reproduced in sheep fed on normal diets such as hay even if large quantities of culture of *Cl. welchii* Type D are introduced into the intestine for long periods of time. This appears to be due to the following factors: the absence of large quantities of fermentable substrate in normal intestinal contents limits the growth of the organisms; the rapid flow of the intestinal contents soon removes any accumulation of bacteria and toxin; the toxin is not easily absorbed and low concentrations are harmless. The disease can be reproduced consistently if the diet is changed suddenly and large quantities of rich food such as wheat are eaten before the culture is introduced into the intestine. In these circumstances the rumen flora cannot adapt itself sufficiently rapidly to the changed environment and large quantities of undigested or partly digested food escape into the small intestine. This provides an ideal substrate for *C. welchii* Type D which grows extremely rapidly and produces high concentrations of epsilon toxin. High concentrations of toxin and possibly other metabolic products of the bacteria rapidly increase the permeability of the intestine. Large quantities of toxin are absorbed and the sheep dies of acute enterotoxaemia. Experimental enterotoxaemia can be distinguished from death due to acidosis which can follow overeating on diets such as wheat. Losses due to enterotoxaemia could be more adequately controlled by avoiding sudden changes of diet and preventing sheep from overeating, and also by adequate vaccination designed to ensure high levels of circulating *Cl. welchii* epsilon antitoxin.

BROOKS, M. E. & ENTESSAR, F. (1957). **Anomalous *Clostridium welchii* Type B strains isolated in Iran.**—*Brit. vet. J.* **113,** 506-508. [Authors' summary modified.] **1378**

Three strains of *Cl. welchii* Type B isolated in Iran differed from the classical Type B strains in that they produced kappa and did not produce lambda antigens and hyaluronidase. Two of the strains were isolated from young goats and the other from an adult sheep.

KOVALENKO, Y. R. (1956). **[Survival and vegetative growth of *Clostridium chauvoei* in soil.]**—*Trud. gosud. nauchno-kontrol. Inst. po Vetpreparatam* **6,** 197-210. [In Russian.] **1379**

In plots of loamy soil *Cl. chauvoei* remained alive from May of one year to October of the next, whether at surface level or 15 cm. deep. The experiments were done in the Moscow region and detailed meteorological data for the experimental period were given. Soil samples were taken monthly and extracts were inoculated on blood agar plates or into g.pigs. Stages in the vegetative growth of the organism were described.—R.M.

GALLUT, J., CHEVÉ, J. & GAUTHIER, J. (1957). Étude immunochimique de 20 vibrions provenant d'avortements bovins. Comparaison avec 2 souches de *Vibrio foetus*. **[Immunochemical study of 20 vibrios from cows which aborted: comparison with *V. fetus*.]**—*Ann. Inst. Pasteur* **93,** 683-694. [Abst. from English summary.] **1380**

The protein fractions of 20 vibrios from aborting cattle were compared with those of *V. fetus, V. bubulus, V. cholerae, V. El Tor* and a vibrio isolated from water. Eighteen proved to be *V. fetus;* one, related to the water vibrio, was a saprophyte, and one was partially related to *V. fetus* and also to *V. bubulus*. The results confirm the specificity of the protein fraction of *V. fetus* and indicate the existence of serological variants of this vibrio.

EIDE, G. W. & HELLE, O. (1957). **Studies on genital vibriosis in sheep.**—*Amer. J. vet. Res.* **18,** 868-872. **1381**

Of 142 ewes, 18 aborted between the 90th and 140th days of pregnancy. Vibrios were recovered from 17 cases, and also from the vaginal mucus of 7 gimmers and of 5 ewes that later lambed normally, and twice from the foetal fluid and once from the stomach contents of normal lambs; also from the semen of 6 of the 11 rams. All the strains isolated behaved similarly in biochemical tests, had common antigenic properties, and caused abortion in g.pigs. It is considered that the infection spread chiefly by a non-coital route. Fertility was normal in a herd of cattle in close contact with the infected flock.—M.G.G.

FRANK, F. W., SCRIVNER, L. H., BAILEY, J. W. & MEINERSHAGEN, W. A. (1958). **Chlortetracycline as a preventative of vibrionic abortion of sheep.**—*J. Amer. vet. med. Ass.* **132,** 24-26. **1382**

Ewes in one group were each fed food cubes

containing 80 mg. chlortetracycline daily; in another group the dose was 420 mg. The ewes in these groups and in an untreated control group were later given a suspension of *V. fetus*-infected tissue orally. Abortion rates were: 11 of 18 untreated ewes; 3 of 17 on the lower dose of antibiotic; and, 2 of 20 on the higher dose.
—T.E.G.R.

KING, E. O. (1957). **Human infections with *Vibrio fetus* and a closely related vibrio.**—*J. infect. Dis.* **101,** 119-128. [Author's summary modified.] **1383**

The cultural and biochemical properties and serological relationship of 10 animal and 7 human strains of *V. fetus,* 3 animal strains of *V. bubulus,* and 4 human strains of a "related vibrio" are described. The sympatomatology of the 15 known human infections with *V. fetus* and the 4 infections with the "related vibrio" is discussed. The possible epidemiology of the disease in man is discussed.

KUJUMGIEV, I. (1957). Prima segnalazione dell'infezione da *Vibrio metschnikovii* (paracolera aviario) nei tacchini e fagiani. [*Vibrio metchnikovi* **infection in turkeys and pheasants.**]—*Vet. ital.* **8,** 1094-1102. [English, French and German summaries.] **1384**

An outbreak of disease, with high mortality, among young pheasants and turkeys was investigated. The symptoms included inappetence, loss of condition, dullness, muscular spasms, torsion of the head, and death. An organism, identified as *V. metchnikovi,* was isolated from the intestinal contents of affected birds.—T.E.G.R.

KATUNARIĆ, M. (1957). Slučaj zaraznog stomatitisa kod jagnjadi. [**A form of infectious stomatitis in lambs.**]—*Vet. Glasn.* **11,** 558-561. [In Croat.] **1385**

K. described a form of infectious stomatitis in lambs 4–5 days old, which occurred in a flock of about 1000 sheep. It was believed to have been due to contamination with *Fusiformis necrophorus* present in the bedding and manure which had accumulated to the height of about 1 ft. in the barn where they were housed. Symptoms included salivation, desquamation of the tongue epithelium, reddish nodules on the gums which later became confluent, and halitosis. The lesions were treated twice a day with an emulsion consisting of 3 parts of tannic acid, 10 parts of tincture of iodine and 87 parts of olive oil. Hygienic control measures were discussed.—E.G.

HOLMBERG, J. (1957). Nautaeläinten utaretulehduksen vastustamisesta. [**Eradication programme for bovine mastitis.**] — *Finsk VetTidskr.* **63,** 366-381. [In Finnish.] **1386**

In ten years the reported cases of mastitis in cattle have increased from 5,556 to 25,989. Of about 60,000 cows in 13,363 herds 15% were affected. The main cause is *Streptococcus agalactiae,* but staphylococcal, *Pseudomonas, Corynebacterium* and *Actinobacillus* infections are also found. The diagnosis is carried out at one of the eight milk inspection laboratories licensed for this purpose and the field examination is made by the milk inspection veterinarian or by the district veterinarian. In an infected herd infected udders are treated with antibiotics and carriers are disposed of.—H. WESTERMARCK.

BORNEFF, J. (1957). Fütterung mit grenzflächenaktiven Substanzen und Disposition für Infekte. [**Effect of feeding surface-active agents on susceptibility to infection.**]—*Arch. Hyg.* **141,** 578-595. [English and French summaries.] **1387**

No direct toxic effect was observed when the detergents "Hostapon" and "Pril" were fed to g.pigs and mice at daily doses of up to 324 mg. per kg. body wt. There was no increase in susceptibility to enteral infection with mixed *E. coli* and *Str. mucosus.*—R.M.

ULBRICH, F. (1957). Vitalfärbung der Dissoziationsformen von Bakterienkulturen in der Mikro- und Makrokultur. [**Vital staining of dissociated forms of bacterial cultures in microculture and macroculture.**]—*Zbl. Bakt. I. (Orig.)* **169,** 221-222. **1388**

Microscopic observation of cover-glass preparations of cultures on fuchsin agar [*V.B.* **26,** 3038] was valuable for detecting dissociated forms of *B. anthracis* and the brucella group. The article is illustrated with 2 coloured plates.
—R.M.

BAGMET, A. G. (1956). [**Biological preparations prepared on pea-hydrolysate medium.**] — *Trud. gosud. nauchno-kontrol. Inst. po. Vetpreparatam* **6,** 194-197. [In Russian.] **1389**

Using the pea-hydrolysate medium described by K. N. Buchnev (1949) to replace meat hydrolysate, the author successfully prepared brucella antigens, "STI" anthrax vaccine, calf paratyphoid formol vaccine and blackleg vaccine.—R.M.

YACOWITZ, H., WIND, S., JAMBOR, W. P., SEMAR, R. & PAGANO, J. F. (1957). **Use of Mycostatin for the prevention of laboratory cases of moniliasis in chicks.**—*Poult. Sci.* **36,** 1171. **1390**

Chicks were fed high dietary concentrations

of neomycin, bacitracin and tetracycline to suppress bacterial development. At 8 days of age 40 were successfully infected with a single oral dose of 80 million *Candida albicans* cells. The infection was claimed to spread *via* the droppings to uninfected chicks, but this was stopped by feeding 50 g. (3550 units per mg.) of nystatin per ton of food for 2 weeks.—M.G.G.

ROLLE, M. & MEHNERT, B. (1957). Hefen als Symbionten bei Tieren. **[Yeasts as symbionts in animals.]** — *Zbl. Bakt. I. (Ref.)* **163,** 306. **1391**

Two symbiotic yeasts are described. The first was *Saccharomycopsis* which occurs regularly and in large numbers in the stomach of healthy rabbits and can only be grown outside the body by using saline at pH 2–3 containing raw potato or other vegetable matter. The second yeast is found in the stomach of guinea-pigs, mice, rats, hamsters and pigs and grows only at body temperature. Whereas both yeasts occur in the stomach as the budding form, they occur in the faeces as single cylindrical and rounded cells. They are found only in the animals and in their faeces.—E. G. WHITE.

OŽEGOVIC, L. & GRIN, I. E. (1957). Dermatomikoze domaćih životinja u našoj zemlji, s posebnim osvrtom na njihovu raširenost u NR BiH. **[Dermatomycosis in domestic animals in Bosnia and Herzegovina.]**—*Veterinaria, Sarajevo* **6,** 274-285. [In Croat. English summary.] **1392**

In two districts 2572 adult cattle, 891 heifers and 843 calves were examined for ringworm. Of these 10 adult cattle, 51 heifers and 114 calves were infected. In about 93% of cases infection was caused by *Trichophyton verrucosum*. Infection with *T. mentagrophytes* was less frequent and *T. violaceum* was isolated from one calf only. In another district 45 of 2559 cattle were infected. Examination of 219 horses and 995 sheep was negative.—E.G.

LAWSON, G. T. N. & MCLEOD, W. J. (1957). *Microsporum canis*—**an intensive outbreak.**—*Brit. med. J.* November 16th, 1159-1160. **1393**

Ringworm in human beings was traced to 9 kittens originating from one cat breeder. 93% of children and 30% of adults in contact with these kittens developed ringworm. The authors stressed the importance of examining apparently healthy cats by means of Wood's light in order to detect subclinical infection. No further cases occurred in the district after the infected cats and kittens were destroyed.—R.M.

BLANK, F. (1957). **Favus of mice.**—*Canad. J. Microbiol.* **3,** 885-896. **1394**

The mouse is the normal host of a dermatophyte that can be acquired by dogs and cats and transmitted to man. Isolated cases and family epidemics of mouse favus were found in Kamouraska County, Province of Quebec, and the specific agent was repeatedly isolated from animals, children and adults. The author reports on the study of 97 references on the morphological characteristics of the fungus and classifies it in the genus *Microsporum*. It is suggested that the specific agent of favus in mice be forthwith named *Microsporum quinckeanum*.

—R. V. L. WALKER.

PIER, A. C., GRAY, D. M. & FOSSATTI, M. J. (1957). **Nocardia infection of the bovine mammary gland—a preliminary report.**—*J. Amer. vet. med. Ass.* **131,** 327-328. **1395**

A Gram-positive filamentous aerobic organism of the *Nocardia* group was isolated from the milk of 16 out of 29 cows in a dairy herd in California. The organism was associated with granulomatous udder lesions containing a granular pus and was highly pathogenic for g.pigs.—E. G. WHITE.

PAL'GOV, A. A. (1956). **[Drying the agent of caprine contagious pleuropneumonia.]** — *Trud. gosud. nauchno-kontrol. Inst. po. Vetpreparatam* **6,** 102-110. [In Russian.] **1396**

Vacuum-dried pleural exudate and lung tissue from infected goats retained its virulence for 6 months. The use of dried material facilitated the production of aluminium hydroxide formol vaccine.—R.M.

ITO, S., IMAIZUMI, K., TAJIMA, Y., ENDO, M. & KOYAMA, R. (1957). **A disease of rats caused by a pleuropneumonia-like organism (PPLO).** —*Jap. J. exp. Med.* **27,** 243-248. [In English. Authors' conclusion modified.] **1397**

A polyarthritis of rats was characterized by redness, swelling, suppuration, necrosis and sometimes natural amputation of the limbs or more often the digits. An organism identical with L4 of the pleuropneumonia group was shown to be the causal agent.

HAMDY, A. H., FERGUSON, L. C., SANGER, V. L. & BOHL, E. H. (1957). **Susceptibility of pleuropneumonia-like organisms to the action of the antibiotics erythromycin, chlortetracycline, hygromycin, magnamycin, oxytetracycline and streptomycin.**—*Poult. Sci.* **36,** 748-754. **1398**

Oxytetracycline, magnamycin and erythro-

mycin were the most effective antibiotics in inhibiting the multiplication of 4 strains of PPLO *in vitro*. Oxytetracycline and magnamycin were more active against the 2 ovine strains, and erythromycin against the 2 avian strains. These 3 antibiotics were also the most effective against an avian strain *in ovo*. Inoculation of 50 or 100 mg. of erythromycin into the sinus cured 18 out of 20 experimentally infected turkeys. [See also *V.B.* **24**, 125 & **26**, 3425.]—M.G.G.

See also absts. **1644** (report, Canada); **1645** (report, Nigeria); **1646** (report, Czechoslovakia).

DISEASES CAUSED BY PROTOZOAN PARASITES

LYNCH, J. E. (1957). **Histological observations on the influence of a special diet in experimental amebiasis in guinea pigs.**—*Amer. J. trop. Med. Hyg.* **6**, 813-819. **1399**

A synthetic diet caused histological changes in the caecal mucosa, consisting of thinning of the mucosa and a dilatation of the glandular area with vacuoles, which were not present in g.pigs fed on ordinary diet. It was suggested that diet without nutritional deficiency could cause tissue disturbances in specific organs for which a given parasite had an affinity, thereby predisposing the animal to infection.—R.M.

ANGELOFF, S., GALABOFF, S. & NIKOLOFF, P. (1957). Elektrophoretische Untersuchungen des infektiösen Prozesses bei Kaninchen mit experimenteller Trypanosomiasis. **[Electrophoretic study of the course of experimental trypanosomiasis in rabbits.]** — *Z. Immun-Forsch.* **114**, 464-471. [English, French and Russian summaries.] **1400**

During the first 90 days after inoculation of *T. equiperdum*, the albumin fraction of the serum gradually decreased and the globulins increased. About the 90th day, when death usually occurred, there was a reduction in the globulin fractions. The gamma-globulin fraction increased significantly between the 60th and 90th days.—R.M.

WOTTON, R. M. & HALSEY, H. R. (1957). **The ingestion of particulate fat from the blood by *Trypanosoma lewisi* and *Trypanosoma equiperdum*.**—*Parasitology* **47**, 427-431. [Authors' summary modified.] **1401**

The ability of *T. lewisi* and *T. equiperdum* to ingest previously stained oil drops which occurred simultaneously in the blood was observed. Tryparsamide incorporated in dyed (Sudan IV) cod-liver oil, when administered orally, was effective against *T. equiperdum* infections in mice.

SOLTYS, M. A. (1957). **Immunity in trypanosomiasis. I. Neutralization reaction. II. Agglutination reaction with African trypanosomes.**—*Parasitology* **47**, 375-389 & 390-395. [Author's summaries modified.] **1402**

I. A study of neutralization reaction of trypanosomes with immune sera is recorded, together with a description of the technique. Neutralizing antibody appeared in rabbits 5 days after infection with *T. brucei* reaching its peak (1:320) within 28 days. The same titre of neutralizing antibody could be produced in rabbits by injections of dead formolized trypanosomes. Antibody titres persisted at high levels for a longer period in animals infected and then treated than in animals immunized with dead trypanosomes. Neutralizing antibody was demonstrable in infected g.pigs but on a much lower level than in rabbits. Mice and rats infected with *T. brucei* and not treated had no demonstrable neutralizing antibody. Mice infected with *T. brucei* could be protected from infection by inoculation at the same time, or even an hour later, with 0·5 ml. of antiserum showing a high level of neutralizing antibody. Mice inoculated with the same antiserum showed passive immunity lasting for 10 days. The evidence that *T. brucei* 'O' after passages through rabbits failed to be neutralized by homologous or heterologous sera which, on the other hand, were able to neutralize the parent strain, suggests that strains after passage through rabbits were not genetic variants, but developed a protective mechanism against immune bodies.

II. Agglutination reactions between living trypanosomes and sera of experimentally infected rabbits are described. Agglutinins in infected rabbits and in rabbits hyperimmunized with dead trypanosomes appeared between 5 and 8 days and reached their maximum within 14 days. They persisted until death in infected untreated rabbits, but for only 3 months in infected rabbits treated with suramin. In hyperimmunized rabbits the titre gradually fell and disappeared 4 weeks after the last inoculation. Agglutinins appear to be species specific; sera of rabbits infected with *T. brucei* agglutinated homologous and heterologous strains of the *T. brucei*, but failed to agglutinate heterologous species of trypanosomes. Similar results were obtained with sera of rabbits infected with other species of trypanosomes. Serum samples from 4 human patients with *T. rhodesiense* infection

produced agglutination reactions with titre varying from 1:80 to 1:1280 with *T. rhodesiense,* but did not agglutinate *T. brucei.*

CANTRELL, W. (1957). **Duration of acquired immunity to *Trypanosoma equiperdum* in the rat.**—*J. infect. Dis.* **101,** 175-180. [Author's summary modified.] **1403**

Rats cured of *T. equiperdum* infection were highly immune 110 days later. Even with antigen doses as low as 9 trypanosomes per cu. mm. of blood at the time of cure the immunity was strong enough 87 days later to give 3½ days' protection against challenges that produced immediate parasitaemia of 10,000 trypanosomes per cu. mm. of blood in control rats. Complete protection against small challenge inocula was found 65, 80 and 98 days after immunization. Oxophenarsine injected i/p at a dose of 20 micromoles per kg. cured all of 10 rats; at a dose of 10 micromoles per kg. it cured 24 of 25 rats.

STEPHENS, J. F., TUGWELL, R. L. & HARMS, R. H. (1957). **The relationship of vitamin K to mortality from cecal coccidiosis.**—*Poult. Sci.* **36,** 1159-1160. **1404**

Supplementation of the diet with 1 or 20 g. of menaphthone sodium bisulphite per ton, or with 3% lucerne meal reduced mortality in chicks with experimental *Eimeria tenella* infection. Blood clotting time decreased also.

—M.G.G.

GRIMINGER, P. (1957). **On inhibition of vit. K activity by sulfaquinoxaline in chicks.** — *Proc. Soc. exp. Biol., N.Y.* **96,** 757-760. [Author's conclusion modified.] **1405**

Increasing doses of vitamin K-active compounds are necessary to overcome the inhibition of prothrombin formation in chicks fed increasing levels of sulphaquinoxaline. The drug will hasten depletion of prothrombin in chicks kept on a vitamin K-deficient ration. When a single dose of about 50 mg. of sulphaquinoxaline was administered orally with varying levels of menaphthone, one mole of menaphthone appeared to overcome the inhibitory effect of more than 800 moles of sulphaquinoxaline.

COOPER, D. M. & SKULSKI, G. (1957). **Effects on feeding furazolidone to fowls. III. Observations on the subsequent effect on fertility and hatchability of feeding the drug at low levels from 4 to 18 weeks of age.**—*Brit. vet. J.* **113,** 509-511. [Authors' summary modified.] **1406**

Furazolidone was fed at 0, 0·01, 0·015 and 0·02% to cockerels from the 4th to 18th week of age. After the drug had been discontinued 8 weeks, males from each group were mated (by rotation) to groups of 20 untreated pullets and fertility and hatchability determined for a 12-week period. Sections from testes of remaining males and from all males used in natural matings were examined histologically at various periods. Some histological changes occurred, mainly in disorder in arrangement of cells in the seminiferous tubules, at all periods up to and including 20 weeks after the drug was discontinued. One group (0·01% conc.) showed depressed fertility and one group (0·015%) a slightly higher incidence of embryonic mortality. Feeding of the drug at low levels produces histological changes in the testes which return to normal only after the lapse of a considerable time from the withdrawal of furazolidone. It is still open to question whether or not the depressed fertility or the incidence of embryonic mortality are directly related to the feeding of the drug. [See also *V.B.* **26,** 797 & **27,** 2047.]

JOYNER, L. P. (1957). **Induced drug-fastness to nitrofurazone in a laboratory strain of *Eimeria tenella*.**—*Vet. Rec.* **69,** 1415-1417 & 1418. [Author's summary copied *verbatim.*] **1407**

After 9 passages in chicks treated continuously with 0·01% nitrofurazone in the food a strain of *E. tenella* was shown to have developed drug-resistance. The nitrofurazone-fast strain responded normally to treatment with either sulphaquinoxaline or sulphadimidine.

LAIRD, M. & LARÍ, F. A. (1957). **The avian blood parasite *Babesia moshkovskii* (Schurenkova, 1938), with a record from *Corvus splendens* Vieillot in Pakistan.**—*Canad. J. Zool.* **35,** 783-795. **1408**

A blood parasite, identified as *Babesia moshkovskii,* was isolated from a crow, *Corvus splendens,* in Pakistan. This parasite has previously been reported from domestic fowls, herons, and some birds of prey in the U.S.S.R., Indo-China and Egypt.—E.G.

SHMULEVICH, A. I. (1956). **[Chemoprophylaxis of some haemosporidial infections in farm animals.]** — *Trud. gosud. nauchno-kontrol. Inst. po Vetpreparatam* **6,** 312-323. [In Russian.] **1409**

Pyraldin (an antrycide analogue) was of no value in preventing piroplasmosis and *Th. annulata* infection in sheep and cattle. Piroplasmin (quinuronium), haemosporidin and thiargen were of some prophylactic value in piroplasmosis in that treated animals did not develop severe infec-

tion although parasites were present in the blood. The interval between prophylactic injection and infection was between 1 and 6 days.—R.M.

JONES, F. E., EYLES, D. E. & GIBSON, C. L. (1957). **Prevalence of toxoplasmosis in the domestic cat.**—*Amer. J. trop. Med. Hyg.* **5,** 820-826. **1410**

Toxoplasms were recovered by inoculation of mice with brain tissue from 34 of 140 cats in Tennessee and 4 of 35 in South Carolina. Sera from 90 cats of the first group and 10 of the second were positive to the dye test: almost all of the cats with titres of 1:256 or more were proved to be infected.—R.M.

FRENKEL, J. K. & HITCHINGS, G. H. (1957). **Relative reversal by vitamins (*p*-aminobenzoic, folic, and folinic acids) of the effects of sulfadiazine and pyrimethamine on toxoplasma, mouse and man.** — *Antibiot. & Chemother.* **7,** 630-638. [Spanish summary pp. 709-710. Authors' summary modified.] **1411**

The therapeutic efficiency of pyrimethamine and sulphadiazine in murine toxoplasmosis was impaired by the administration of *p*-aminobenzoic acid, and slightly by folic acid, but not by smaller doses of folinic acid, nor by larger doses of dried brewer's yeast. Folinic acid, and to a lesser degree yeast, prevented and cured, in man, the thrombocytopenia and leucopenia induced by combined treatment with pyrimethamine and sulphadiazine.

COWAN, A. B. (1957). **Reactions against the megaloschizonts of *Leucocytozoon simondi* Mathis and Leger in ducks.**—*J. infect. Dis.* **100,** 82-87. [Author's summary modified.] **1412**

Study of duck tissues infected with megaloschizonts of *Leucocytozoon simondi* presented evidence of reactions against the parasites which included: possibly encapsulation; destruction by phagocytes; necrosis; combined phagocytosis and necrosis; and destruction by inflammatory cells. It appeared that phagocytes were a major element of host defence. This suggested an explanation of the temporary resistance of ducks which had been sublethally infected and then protected against re-infection for an extended period. It is postulated that in the absence of continued stimulation by frequent re-infection, the number of phagocytes returns to normal instead of remaining at an effective, high level, and the host again becomes susceptible. The production of antibodies in leucocytozoon infections must be investigated for complete understanding of the host-parasite relationships.

See also abst. **1645** (report, Nigeria).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

BACHRACH, H. L., CALLIS, J. J., HESS, W. R. & PATTY, R. E. (1957). **A plaque assay for foot-and-mouth disease virus and kinetics of virus reproduction.** — *Virology* **4,** 224-236. [Abst. from authors' summary.] **1413**

A plaque assay for F. & M. disease virus, type A, was developed in primary bovine kidney cultures, and the kinetic course of virus reproduction was established. The effect of environmental variables on plating efficiency was studied. In virus reproduction experiments progeny appeared at 2·5 hours. At 11·5 hours there were $10^{8.6}$ plaque-forming units per ml. corresponding to a release from each cell of approx. 370 units.

RIBELIN, W. E. (1957). **The cytopathogenesis of vesicular stomatitis in cattle.** Dissertation, Univ. of Wisconsin pp. 101. [Abst. from abst. in *Diss. Abstr.* **17,** 1174-1175 (1957).] **1414**

Histological study of infected calf tongue showed that the viral infection begins in the stratum spinosum, later extending down into the basal layer and up into the stratum granulosum. Within this tissue the effects of the virus are manifested chiefly in the cytoplasm of infected cells. In infected cells shrinkage of cytoplasm occurs concomitantly with increased prominence of the intercellular bridges and the appearance of oedema fluid between the cells. Cytoplasmic shrinkage continues, the cell processes withdraw completely until the cell consists of the apparently unaltered nucleus enclosed by a rim of granular cytoplasm. Nuclear shrinkage and pyknosis then occur and the cell loses all extracellular attachments to float free in the accumulating vesicle fluid. The entire process occurs in less than 24 hours.

Studies of viral multiplication in tissue cultures derived from foetal bovine skin revealed that release of virus from infected cells began about the third hour following infection of the cell. A subsequent transient drop occurred, followed by a regular and progressive increase in the amount of virus released.

Phase microscope studies were made of virus-infected foetal bovine skin cells grown in tissue culture. Basically the same changes were seen as those encountered in the infected host.

BULLING, E. (1957). Die Komplementbindungsreaktion als Hilfsmittel für die Tollwutdiagnostik. **[Complement-fixation test as an aid to the diagnosis of rabies.]**—*Zbl. Bakt. I. (Orig.)* **169,** 161-178. [English, French, Russian and Spanish summaries.] **1415**

Antigen for the c.f. test was prepared by triple freezing of a 16·6% saline suspension of the brain under test. The antibody was serum from hyperimmunized rabbits. Results of tests on 103 brains from wild and domestic animals closely agreed with, and were obtained more rapidly than, the results of animal inoculation. The test was particularly valuable when histological examination of the brain from suspected cases failed to reveal the presence of Negri bodies.

—R.M.

PRESNALL, C. C. (1957). Control de los animales silvestres vectores de rabia a lo largo de la frontera mexicano-estadounidense. **[Control of wild life vectors of rabies along the Mexico-U.S.A. border.]** — *Bol. Ofic. sanit. panamer.* **43,** 159-162. [English summary.] **1416**

Control of the numbers of wolves, coyotes and foxes in a zone extending 150 km. on both sides of the border has greatly reduced the incidence of rabies in wild animals in that area.

—M.G.G.

VOIOVICH, N. I. (1957). **[Report on an All-Union Conference on rabies, held at Kharkov 25th–27th June 1957.]**—*Voprosui Virusologii* **2,** 376-377. [In Russian.] **1417**

A recent epidemic of rabies reached its peak in 1951, but the incidence in 1956 was still higher than in 1940. From 80 to 87% of all cases occurred in the R.S.F.S.R., the Ukraine and Uzbekistan. Plans for the control and vaccination of dogs had been only partly fulfilled, and there was lack of uniformity in control measures.

—R.M.

ATANASIU, P. & LAURENT, C. (1957). Multiplication du virus de la rage des rues sur une cellule gliale (ependymome de la souris) en culture de tissus; aspect histologique. **[Multiplication of rabies street virus in tissue culture of glial cells (mouse ependymoma).]** —*C.R. Acad. Sci., Paris* **245,** 2562-2564. **1418**

Rabies street virus was cultivated in tissue cultures of an ependymoma of mice. After a latent period lasting 10 days, the virus caused slow cellular degeneration and attained a titre of 10^{-1}–$10^{-3.5}$ L.D.$_{50}$, which lasted for almost 2 months. Some apparently normal cells in infected cultures contained Negri bodies.—R.M.

PEARSON, H. E., ATANASIU, P. & LÉPINE, P. (1958). La multiplication du virus rabique dans un astrocytome transmissible chez la souris. **[Multiplication of rabies virus in a transmissible astrocytoma of mice.]** — *Ann. Inst. Pasteur.* **94,** 1-6. [English summary modified.] **1419**

S/c transplantation of the astrocytoma in C3H mice induced after 13 to 20 days the formation of tumours weighing 5 to 10 g. These tumours allowed the propagation of rabies virus, and the titre was almost the same as that obtained in the c.n.s. after intracerebral inoculation. Rabies virus induced the formation of pyknotic nuclei and necrosis in the tumour cells. Mice inoculated with the infected tumour died from rabies after 14 to 15 days. Mice which also received antirabic serum died from the tumour after 25 to 35 days.

FENNER, F. & BURNET, F. M. (1957). **A short description of the poxvirus group (vaccinia and related viruses).**—*Virology* **4,** 305-314. [Authors' summary copied *verbatim.*] **1420**

At the International Microbiological Conference held in Rome in September, 1953 the Virus Subcommittee of the International Nomenclature Committee instructed the study groups concerned with the better known groups of animal viruses to prepare for publication descriptions of certain virus groups and group members. Descriptions of the Myxovirus and the Poliovirus groups have already been published.

STAMM, D. D. & KISSLING, R. E. (1957). **The influence of reciprocal immunity on eastern and western equine encephalomyelitis infection in horses and English sparrows.** — *J. Immunol.* **79,** 342-347. [Authors' summary modified.] **1421**

Twelve previously uninoculated English sparrows and 15 immune to Western equine encephalomyelitis (WEE) were inoculated with Eastern equine encephalomyelitis (EEE) virus. The average level and duration of viraemia did not differ significantly between groups. The control group suffered 50% mortality due to EEE infection, while no deaths occurred in the WEE-immune group. Nine previously uninoculated and 8 EEE-immune English sparrows were inoculated with WEE virus. WEE viraemia was of shorter duration and reached lower maximum levels in EEE-immune birds than in the control birds.

In three horses previously infected with WEE, infection with EEE did not produce central nervous system symptoms nor deaths. The possible influence of these factors on the epidemiology and geographical distribution of clinical disease produced by these viruses was discussed.

LUDFORD, C. G. & COOK, I, (1957). **Murray Valley encephalitis: a survey of human and animal sera in Queensland.**—*Med. J. Aust.* August 31st, 319-325. **1422**

The virus neutralization (mouse protection) test was more specific than the complement-fixation test in differentiating Murray Valley encephalitis (M.V.E.) from dengue fever. Examination of a number of human and horse sera showed that M.V.E. virus, or some closely related virus, has had a wide distribution in tropical Queensland. Sera from a number of other species gave negative results in every case.
—D. S. ROBERTS.

HAVLÍK, O. & KOLMAN, J. M. (1957). Průkaz protilátek proti viru klíštové encefalitidy u některých našich netopýrů. [**Antibodies against the virus of tick-borne encephalitis in bats.**]—*Čsl. Epidemiol., Mikrobiol., Imunol.* **6,** 241-244. [In Czech. Abst. from English summary.] **1423**

Serum neutralization tests in 104 bats of 5 species from two districts in central Bohemia revealed antibodies for tick-borne encephalitis in *Myotis myotis, Rhinolophus hipposideros, Plecotus auritus,* and *Barbastella barbastellus.* It is considered that the virus may be transmitted from reservoir animals to bats by biting insects. But existence of an unknown virus with similar immunogenic properties is not to be excluded.

SHIMIZU, T., ISHIZAKI, R., KONO, Y., ISHII, S. & MATUMOTO, M. (1957). **Propagation of equine abortion virus in horse kidney tissue culture.**—*Jap. J. exp. Med.* **27,** 175-180. [In English. Authors' summary modified.] **1424**

Serial propagation of equine abortion virus by the roller tube method in horse kidney tissue culture was described. The virus caused a specific cytopathic change in the tissue. The usefulness of this type of tissue culture for the study of this virus was discussed.

BROWN, W. W., CHOW, T. L. & JENSEN, R. (1957). **Symposium on the mucosal disease complex. I. Infectious bovine rhinotracheitis in feedlots of Colorado.**—*J. Amer. vet. med. Ass.* **130,** 379-381. **1425**

RAMSEY, F. K. & CHIVERS, W. H. (1957). **Symposium on the mucosal disease complex. II. Pathology of a mucosal disease of cattle.** —*Ibid.* 381-383. **1426**

PRITCHARD, W. R. & CARLSON, R. G. (1957). **Symposium on the mucosal disease complex. III. Virus diarrhea in cattle.**—*Ibid.* 383-385. **1427**

I–III. These articles described the main features of the three diseases and contain no new information, except for the results of examination of 64,000 cattle in 63 outbreaks of infectious rhinotracheitis: no cattle over 2 years old were affected and morbidity in youngstock averaged 24·7% with a mortality of 2·2%.—R.M.

KENDRICK, J. W., YORK, C. J. & MCKERCHER, D. G. (1957). **A controlled field trial of a vaccine for infectious bovine rhinotracheitis.**—*Proc. 60th Ann. Meet. U.S. live Stk Sanit. Ass., Chicago,* 1956 pp. 155-158. **1428**

Twenty heifers were vaccinated i/m with 2 ml. of modified live virus vaccine; 11 unvaccinated heifers were kept in contact with them and 4 were isolated as controls. Twenty-three days later the vaccinated animals had antibodies against the virus with titres ranging from 1:3 to 1:50; all 35 animals were then challenged by spraying into the nostrils 10 ml. of tissue culture containing the virus. Within 4 days all 15 controls had developed a typical infectious bovine rhinotracheitis infection whereas the vaccinated heifers remained healthy. The trial demonstrated the efficiency of the vaccine and indicated that there was no danger of infection occurring in animals in contact with vaccinated animals.
—E.V.L.

WILSDON, A. J. (1958). **Swine fever.**—*Vet. Rec.* **70,** 3-12. [Abst. from author's summary.] **1429**

W. reviewed the swine fever position in Great Britain with reference to the incidence of the disease since 1938. He described the symptoms, the principal causes of spread and the lesions, giving information as to diagnosis of the disease, and mentioned the possible value of the gel-diffusion precipitin test in assisting diagnosis. He discussed procedure, the completion of reports, and dealing with outbreaks; and, in detail, the control of the disease, especially the statutory procedure. He examined the use of vaccines particularly crystal violet and lapinized vaccines. He suggested that a modified policy of slaughter might be tried in conjunction with vaccination and restrictions on the movement of pigs.

GHEORGHIU, I., MIHĂIŢĂ, S., ALBU, T. & STANCA, M. (1957). [**Commencement of**

immunity in pigs after inoculation of formolized adsorbate swine fever vaccine.]—*Anu. Inst. Serui Vaccin. Pasteur Bucuresti* **2,** 63-74. [In Roumanian. French, German and Russian summaries.] **1430**

Immunity was not fully established until 12 days after vaccination. Of those pigs which developed swine fever during the 12 days after vaccination, some had a chronic infection due to the presence of a partial immunity and were dangerous as excretors of virus during their long period of recovery.—R.M.

SHCHERBATUIKH, P. Y. *et al.* (1957). [**Gamma globulin for the treatment of swine fever.**]—*Veterinariya, Moscow* **34,** No. 12. p. 64. [In Russian.] **1431**

Gamma globulin was prepared from swine fever immune serum by precipitation by 25% alcohol with the addition of 6% glycerol. It was stated to have been used for prophylactic purposes on 220 pigs, and to have given better protection than hyperimmune serum, but there were no details of dosage or results.—R.M.

MIHĂIŢĂ, S. & STOICAN, V. (1957). [**Action of sodium merthiolate on the virus of swine fever.**] — *Anu. Inst. Serui Vaccin. Pasteur Bucuresti* **2,** 293-298. [In Roumanian. French, German and Russian summaries.] **1432**

At a conc. of 1:1000 in virulent blood, sodium merthiolate (thiomersal) did not kill the virus of swine fever after 398 days.—R.M.

LAPČEVIĆ, E., NIKOLIĆ, B., ĆIRIĆ, V., STOŠIĆ, N. & PAVLOVIĆ, O. (1957). O jednom febrilnom hemoragičnom infektivnom obolenju kod pasa. [**An infectious, febrile, haemorrhagic disease in dogs.**]—*Vet. Glasn.* **11,** 752-760. [In Croat. English summary.] **1433**

An infectious fatal haemorrhagic disease, probably of virus origin, occurred in training kennels for gun dogs. At first only puppies aged 3–4 months were affected, later it occurred also in older dogs. The disease was studied in nine spontaneous cases and in five dogs experimentally infected either with liver or spleen material given orally or by parenteral inj. of organ extract filtrates. There was high temp., loss of appetite, apathy, haemorrhages from most mucous membranes, petechiae in the skin, haematuria, bloody diarrhoea, thrombocytopenia, prolonged clotting time and an increase in α and β, and a decrease in γ globulins in the serum.

The disease, which may be an atypical form of virus hepatitis, took either an acute course, death occurring within 1–2 days, or a subacute form lasting 2–3 weeks, usually complicated by haemorrhagic bronchopneumonia. It differed from typical virus hepatitis by the presence of fever and thrombocytopenia and the absence of leucopenia and granulocytopenia. Most of the dogs had either had distemper or at least had been immunized. Further research was contemplated.—E.G.

PAUNOVIĆ, S. (1957). [**Virus diseases of young cats.**]—*Acta vet., Belgrade* **7,** 95-104. [In Serbian. German summary.] **1434**

P. advocated use of the name virus agranulocytosis of young cats for "feline colibacillosis", "feline infectious gastro-enteritis", "feline infectious laryngo-tracheitis", "feline distemper", "malignant panleucopenia of cats" etc., which, he maintained were all terms describing a condition caused by the same virus. Leucopenia with marked neutropenia and presence of acidophile intranuclear inclusions in cells of meso- and endodermal origin are constant features of the disease. Young cats and other feline species up to the age of one year are susceptible. Acquired immunity is transferred from suckling dams to their offspring.—E.G.

BOLIN, V. S. (1957). **The cultivation of panleucopenia virus in tissue culture.**—*Virology* **4,** 389-390. [Author's summary modified.] **1435**

Panleucopenia virus of cats was established in tissue culture of cat kidney and serially passaged, producing a characteristic cytopathogenic effect. The tissue culture-adapted virus reproduced clinical panleucopenia in cats.

I. ANDREWES, C. H. & CHAPRONIERE, D. M. (1957). **Propagation of rabbit myxoma and fibroma viruses in a guinea pig sarcoma.**—*Virology* **4,** 346-350. **1436**

II. CHAPRONIERE, D. M. & ANDREWES, C. H. (1957). **Cultivation of rabbit myxoma and fibroma viruses in tissues of nonsusceptible hosts.**—*Ibid.* 351-365. [Authors' summaries modified.] **1437**

I. Myxoma virus multiplied *in vitro* and *in vivo* in the Daels guinea-pig sarcoma. It caused cell destruction *in vitro* but had no oncolytic effect *in vivo*. It produced only a transient infection of the tumour, which became resistant to re-infection; it could not be carried in series by transplantation of infected tumours. Fibroma virus also multiplied and caused cell destruction *in vitro* but failed to multiply in the tumour *in vivo*.

II. The rabbit myxoma and fibroma viruses, which are naturally very host-specific, proved to be much less so in tissue culture. Myxoma virus multiplied *in vitro* in various tissues of squirrel,

g.pig, rat, hamster and man and produced cytopathogenic effects in some of these. Ability to grow in rat tissues depended on the age of the animal furnishing the tissue. In the mouse, growth was demonstrated only in organ cultures of brain. Fibroma virus also multiplied in cultures of g.pig, rat and human tissues.

BREITENFELD, P. M. & SCHÄFER, W. (1957). **The formation of fowl plague virus antigens in infected cells, as studied with fluorescent antibodies.**—*Virology* **4**, 328-345. [Authors' summary slightly modified.] **1438**

The multiplication of fowl plague virus was followed in tissue culture using fluorescent antibodies against its two antigenic components. With this method the g-antigen was first detected 3 hours after infection and the haemagglutinin antigen after 4 hours. The g-antigen was situated in the region of the nucleus whereas the haemagglutinin antigen was distributed throughout the cell and was present in a higher concentration near the nucleus. Later the g-antigen was also found in the cytoplasm; the haemagglutinin antigen accumulated in the peripheral region of the cell and was demonstrable also in fine filaments protruding from the cell margin.

FORŠEK, Z., ZELJKO, M. & KURTANJEK, I. (1957). Imunizacija peradi protiv Newcastle bolesti dodatkom vakcine u vodi za piće sa stabilizatorom. **[Immunization against Newcastle disease by virus in drinking water.]**—*Veterinaria, Sarajevo* **6**, 4-12. [In Croat. English summary.] **1439**

Only about 4% of fowls 5–6 months old failed to develop satisfactory immunity following administration of Mukteswar strain glycerol vaccine in drinking water, using dried milk as stabilizer. The most suitable concentration was 1 ml. of vaccine/150 ml. of water.—E.G.

JAKŠIĆ, B. L. & STEFANOVIĆ, Ž. M. (1957). Pato-histološke promene u centralnom nervnom sistemu zaklane živine. **[Histological lesions in the central nervous system of fowls.]**—*Vet. Glasn.* **11**, 781-783. [In Croat. French summary.] **1440**

In recent years incidence of the nervous form of Newcastle disease was reported to be on the increase in Yugoslavia. Acute non-purulent encephalitis was present in 84 of 424 brain material samples from slaughtered fowls. It was stated that nervous symptoms were sometimes seen in fowls 5–8 days after vaccination with Muktsewar vaccine. Compulsory vaccination was introduced in 1954 and repealed in 1956.

—E.G.

BANKOWSKI, R. A. & HYDE, J. (1957). **Cultivation and cytopathogenicity of Newcastle disease virus in Hela and bovine kidney cell cultures.**—*Amer. J. vet. Res.* **18**, 743-746. [Authors' summary modified.] **1441**

Two strains of Newcastle disease virus, one highly pathogenic and the other avirulent, were propagated in monolayer cultures of HeLa and bovine kidney cells. Cytopathogenicity at the 18th serial passage was correlated with virulence.

PRINCE, A. M. & GINSBERG, H. S. (1957). **Studies on the cytotoxic effect of Newcastle disease virus (NDV) on Ehrlich ascites tumor cells. I. Characteristics of the virus-cell interaction. II. The mechanism and significance of *in vitro* recovery from the effect of NDV.** *J. Immunol.* **79**, 94-106 & 107-112. [Authors' summaries modified.] **1442**

I. It was confirmed that the reaction of NDV with Ehrlich ascites tumour cells killed the cells. There was no demonstrable multiplication of infective, haemagglutinating, or complement-fixing particles. Before death, cells grew faster for at least 4 hours. The cytotoxic effect was shown to be caused by the viral particle. Prior treatment of cells with receptor-destroying enzyme or with specific antiserum protected against viral damage. Immune serum injected only 15 min. after viral inoculation did not prevent the death of tumour cells. Cell injury was prevented by prior treatment of cells with ultraviolet inactivated NDV without concomitant reduction in their power to combine with infective NDV. The cytotoxic activity of NDV, although readily destroyed by ultra-violet light, was less sensitve to it than the infective property.

II. Ehrlich ascites tumour cells recovered their capacity to propagate in mice when suspensions of NDV and tumour cells were held at 21° to 23°C. for 4 hours *in vitro*. "Recovery" occurred only when conditions permitted elution of virus from the cells. At 37°C. recovery was prevented by the establishment of a stable union between virus and cell, and within 10 min. at this temp. the adsorbed virus could no longer combine with specific antibody. These data suggest that the killing of tumour cells by NDV is not solely a surface reaction.

SINKOVICS, J. (1957). **The human pathogenicity of the Newcastle disease virus and its relation to the mumps, fowl plague and influenza viruses.** — *Arch. ges. Virusforsch.* **7**, 242-257. [In English.] **1443**

Newcastle disease virus (NDV) was isolated from the ocular discharge of two human subjects. Interference phenomena were observed in mouse

lung between this virus and influenza virus and, to a slight degree, classical fowl plague virus. Numerous incomplete particles of influenza virus were produced. In the embryonated hen's egg there was interference between the mumps virus and NDV; in the mouse lung there was no interference between the mumps virus and the viruses of influenza or classical fowl plague, nor between the lymphocytic choriomeningitis virus or the herpes virus and the influenza virus. Haemagglutination-inhibition and neutralization occurred only between the mumps virus and NDV but there was no cross immunity between these viruses. Recombination tests were negative except for one in which a non-pathogenic NDV was isolated from chick embryos inoculated with live mumps virus and heat-inactivated NDV. —T.E.G.R.

RAGGI, L. G. & LEE, G. G. (1957). **Relationship between immunity and serum-neutralization titers in chickens inoculated with three infectious bronchitis vaccines.** — *Amer. J. vet. Res.* **18,** 740-742. [Authors' summary modified.] **1444**

A study of the relationship between serum-neutralization titre and response to intratracheal challenge in birds vaccinated with 3 strains of infectious bronchitis virus revealed a direct correlation in only one of the 3 vaccines. Noticeable discrepancies between titres and challenge results were observed in birds vaccinated with the other 2 strains.

CHANG, P. W., DARDIRI, A. H., FRY, D. E. & YATES, V. J. (1957). **A study on the criteria for evaluating infectious bronchitis immunity.** —*Avian Diseases* **1,** 304-311. [Authors' summary modified.] **1445**

The different means of evaluating infectious bronchitis immunity in a group of susceptbile birds were compared. When groups of 5 birds were studied on 7 consecutive days and also on the 10th day after challenge, any one of the following criteria could be used satisfactorily: respiratory symptoms, gross pathological lesion of the trachea, histopathological lesion of the trachea, and recovery of the virus from the tracheal exudate and lungs. However, each testing procedure was of value only for a limited period and none was effective over the total sampling period.

PECKHAM, M. C. (1957). **Case report—Lens opacities in fowls possibly associated with epidemic tremors.**—*Avian Diseases* **1,** 247-255. [Author's summary modified.] **1446**

Ocular lesions which occurred after infection with epidemic tremor were seen in three flocks of chickens 3–4 months old. The eyes had a diffuse or linear opacity of the lens. Histologically, there was cataract formation and iridocyclitis. No organisms were isolated nor were any seen in tissue sections. Since a similar condition has been produced experimentally with the virus of epidemic tremor by other workers, it is suggested that the condition described may represent a gross, morphological expression of epidemic tremor.

FABRICANT, J., RICKARD, C. G. & LEVINE, P. P. (1957). **The pathology of duck virus hepatitis.**—*Avian Diseases* **1,** 256-274. [Authors' summary slightly modified.] **1447**

Virus neutralization tests with convalescent sera from human and canine virus hepatitis, as well as normal human and canine sera, failed to demonstrate any serological relationship of these diseases to duck virus hepatitis. The pathology and pathogenesis of virus hepatitis of ducks was studied in two experimentally infected ducklings. The significant gross pathological changes were confined to the liver. This organ became enlarged, pale, soft, and sprinkled with petechial and ecchymotic haemorrhages. Microscopically, the primary changes consisted of necrosis of the parenchymal cells of the liver, and proliferation of the bile duct epithelium. These changes were accompanied by varying degrees of inflammatory response and haemorrhage. In ducklings that did not develop symptoms or die, successful regeneration of parenchymal cells proceeded not only from surviving parenchymal cells but also from bile duct epithelium. These pathological changes in the experimental birds were essentially similar to those observed previously in natural infections.

BENEDICT, A. A. (1957). **The intradermal test for epidemiologic studies of turkey ornithosis.** — *Amer. J. Hyg.* **66,** 245-252. [Author's summary modified.] **1448**

The use of the intradermal test for detection of psittacosis exposure in turkeys was described [see also *V.B.* **27,** 140]. A comparison was made of the intradermal and serological reactor rates among infected and healthy turkey flocks. In two flocks naturally infected for 3 to 4 months, 71 and 78%, respectively, were skin reactors, and 85 and 83%, respectively, were positive by either the direct or indirect complement-fixation tests. The serological and skin tests agreed in 70 to 85% of the infected birds studied. Hypersensitivity was variable in turkeys infected for about 3 weeks.

MATUMOTO, M., OMORI, T., INABA, Y., ISHITANI, R., KUROKI, H., MORIMOTO, T. &

ISHII, S. (1957). **Miyagawanella: psittacosis-lymphogranuloma group of viruses. II. Psittacosis of birds in Japan.**—*Jap. J. exp. Med.* **27,** 191-205. [In English. Authors' summary modified.] **1449**

Psittacosis virus was isolated from 8 Bengal finches, a budgerigar, a cookateel, a Java sparrow and a parrot in Japan.

GIROUD, P. & GAUTHIER-VILLARS, P. (1957). Des agents néo-rickettsiens ou voisins de la psittacose démontrent expérimentalement l'importance des zoonoses dans la pathologie rénale. [**Renal lesions caused by agents related to the psittacosis-lymphogranuloma group of viruses ("neorickettsia").**]—*C. R. Acad. Sci., Paris* **245,** 1976-1978. **1450**

Lesions were present in kidney, lung and heart of rabbits inoculated with 7 strains of "neorickettsia", including one strain (Q 18) from a ewe which aborted and another (H 16) from a dog with encephalitis. The renal lesions apparently disappeared about 2 months after infection. —R.M.

I. GIROUD, P. & MARINESCO, G. (1957). Réactions oculaires et nerveuses provoquées par l'injection dans la chambre antérieure de l'oeil de néorickettsies ou d'éléments du groupe de la psittacose. [**Ocular and nervous reactions following intraocular injection of certain organisms of the psittacosis group ("neorickettsia").**]—*C. R. Acad. Sci., Paris* **245,** 2433-2435. **1451**

II. GIROUD, P. & MARINESCO, G. (1957). Hépato-néphrites chez les lapins nouveau-nés dues à des néo-rickettsies ou à des éléments du groupe de la psittacose. [**Hepatonephritis in new-born rabbits caused by certain organisms of the psittacosis group ("neorickettsia").**]—*Ibid.* 2566-2568. **1452**

I. Intraocular inoculation of rabbits with Strains X14, V14, L17, T13 and Q18 (the last-named isolated from sheep which aborted) of "neorickettsia", provoked not only inflammatory changes in the eye, but also vascular congestion and oedema in the brain and meninges.

II. Intraperitoneal inoculation of new-born rabbits with Strains X14 and Q18 of "neorickettsia" caused nephritis and hepatitis with moderate fatty degeneration and hyperplasia of Kupffer cells. [See also *V.B.* **27,** 788.]—R.M.

TAJIMA, M., NOMURA, Y. & KUBOTA, Y. (1957). **Structure and development of viruses of the psittacosis-lymphogranuloma group observed in the electron microscope.**—*J. Bact.* **74,** 605-620. [Authors' summary modified.] **1453**

The intracellular development of two virus strains of this group was studied with the electron microscope, using thin sections of infected tissues. In lungs of mice infected with the Maeda strain isolated from a cow, viral forms were classified into (1) elementary bodies, (2) intermediate forms, (3) large forms, and (4) incomplete forms. In addition to these viral forms, the matrix which was considered to be a pre-existing component of viral forms was described. Inclusion bodies, which were intracellular colonies of these viral structures, could be divided into 4 types according to the prevailing viral structures contained. In chorioallantoic membranes of embryonated eggs inoculated with the Cal 10 strain of meningopneumonitis virus, various types of viral forms and inclusion bodies similar to those described for the Maeda strain in mouse lung were observed clearly. In the same kind of materials, the development of viral forms was followed at various times after inoculation. The first viral structure to appear in the cytoplasm of infected cells was the matrix. In the next stage, incomplete limiting membranes developed in the periphery of the matrix and enclosed portions of the matrix progressively, giving rise to the incomplete forms. Then large forms developed by the completion of limiting membranes. Viral forms in these stages of development were segmented by the constriction of limiting membranes. The large forms reduced in size gradually to transform into intermediate forms, from which elementary bodies, the virus at its terminal stage of development, were produced.

GORET, P., MORNET, P., GILBERT, Y. & PILET, C. (1957). Immunité croisée entre la maladie de Carré et la peste bovine. [**Cross immunity between dog distemper and rinderpest.**] — *C. R. Acad. Sci., Paris* **245,** 2564-2566. **1454**

Six ferrets were inoculated s/c with lapinized rinderpest virus Strain Nakamura III. After 20 days they were each inoculated s/c with 10 mg. spleen from a ferret with distemper (each dose about 100,000 m.l.d.). Two of the six and two control ferrets died from distemper; the rest remained healthy. Four cattle aged 22 months were each inoculated s/c with 5 ml. of a 30% spleen suspension from a ferret with distemper. One animal died from other causes; the 3 others were each inoculated 15 days later with 300,000 m.l.d. of virulent rinderpest virus: they remained healthy. This work confirmed that of Polding & Simpson [*V.B.* **27,** 3288].—R.M.

WARREN, J. & CUTCHINS, E. C. (1957). **General characteristics and viral susceptibility of bovine embryonic tissue cultures.**—*Virology*

4, 297-304. [Authors' summary modified.] **1455**

Preparation of serial passage cultures of bovine lung, muscle, and kidney tissues is described. These have been tested for their susceptibility to a large number of viruses. The agents of vaccinia and vesicular stomatitis readily multiplied in such tissues. Adenoviruses, herpes, and B virus could be propagated for two to four passages but with a progressive loss of infectivity. Bovine tissue cultures did not support the growth of 27 other agents, including the viruses of louping-ill, rabies and equine encephalomyelitis.

SHIMIZU, T., ISHIZAKI, R., KONO, Y., ISHII, S. & MATUMOTO, M. (1957). **Multiplication of Newcastle disease and fowl plague viruses in swine kidney tissue culture.**—*Jap. J. exp. Med.* **27,** 181-189. [In English. Authors' summary modified.] **1456**

The serial propagation and cytopathogenic effect of Newcastle disease and fowl plague viruses in pig kidney tissue culture were described. The cytopathogenicity of Newcastle disease virus for the cells of chick embryos and pig kidneys did not alter. The potential pathogenicity of Newcastle disease and fowl plague viruses for pigs was discussed.

SULKIN, S. E., FINKELSTEIN, R. A. & ROSENBLUM, E. D. (1957). **Effect of zymosan on bacteriophage clearance.**—*Science* **125,** 742-743. **1457**

Rabbits received intracardially 100 mg. of zymosan [see *V.B.* **25,** 2441] per kg. body wt., followed 4 hours later by 1×10^9 staphylococcal phage i/v. Assay of the phage content of the blood 30, 60 and 180 min. later revealed that it was higher in these animals than in control rabbits which had received saline soln. instead of zymosan. A sublethal dose of *Escherichia coli* endotoxin had a similar effect.—M.G.G.

LWOFF, A. (1957). **The concept of virus. The third Marjory Stephenson Memorial lecture.**—*J. gen. Microbiol.* **17,** 239-253. **1458**

L. discussed the history of virus research, the life cycle of the bacteriophage, the definition of infection, the definition of a virus, the origin of the prophage, and the reasons for considering viruses to be neither organisms nor alive. He proposed that viruses could be defined as: "strictly intracellular and potentially pathogenic entities with an infectious phase, and (1) possessing only one type of nucleic acid, (2) multiplying in the form of their genetic material, (3) unable to grow and to undergo binary fission, (4) devoid of a Lipmann system".—M.G.G.

See also absts. **1332** (evidence of virus in "shipping fever"); **1644** (report, Canada); **1645** (report, Nigeria); **1646** (report, Czechoslovakia).

IMMUNITY

HAWKINS, J. D. (1957). **The use of radioactive isotopes in immunological investigations. 12. The binding of a hapten by antibodies *in vivo*.**—*Biochem. J.* **67,** 537-540. [Author's summary copied *verbatim*.] **1459**

The persistence in the blood plasma of various fractions containing ^{131}I has been determined after the intravenous injection of ^{131}I-labelled di-iodotyrosine into normal rabbits and rabbits immunized against highly iodinated bovine plasma albumin.

During the first 24 hr. after injection a substance whose properties resemble those of di-iodotyrosine is present in higher concentration in the plasma of the immunized rabbits than in that of the normal ones. It is suggested that this is due to combination of the hapten with antibodies in the plasma of the immune animals. During the same period inorganic iodide is also present in higher concentration in the plasma of the immunized rabbits than in that of the normal ones.

HALLIDAY, R. (1958). **The absorption of antibody from immune sera and from mixtures of sera by the gut of the young rat.**—*Proc. roy. Soc. Ser. B.* **148,** 92-103. [Abst. from author's summary.] **1460**

The amount of antibody transmitted to the circulation from immune rat serum administered by mouth in a single dose to 12-day-old rats is directly proportional both to the antibody concentration and to the volume of serum administered for doses up to 0·1 ml. The amount of antibody transmitted does not increase with larger doses and is limited to that sufficient to produce a mean circulating titre of 1/32 of that of the immune serum. Admixture of certain heterologous sera with the immune rat or rabbit serum administered by mouth interferes with the transmission of antibody to the circulation to an extent that cannot be accounted for by dilution.

WEIGLE, W. O. & MAURER, P. H. (1957). **The effect of complements on soluble antigen–**

antibody complexes.—*J. Immunol.* **79,** 211-222. [Abst. from authors' summary.] **1461**

Two hypotheses were set forth to describe the mechanism involved in the precipitation of soluble complexes by complement. These hypotheses were: (1) complement fixed to the complexes to such an extent that the increase in weight and/or neutralization of charges caused the complexes to precipitate; (2) the complement was multivalent to antibody and/or antigen and, therefore, was able to link the complexes together to form precipitating aggregates.

I. Wolfe, H. R., Mueller, A., Neess, J. & Tempelis, C. (1957). **Precipitin production in chickens. XVI. The relationship of age to antibody production.**—*J. Immunol.* **79,** 142-146. **1462**

II. Wolfe, H. R., Tempelis, C., Mueller, A. & Reibel, S. (1957). **Precipitin production in chickens. XVII. The effect of massive injections of bovine serum albumin at hatching on subsequent antibody production.**—*Ibid.* 147-153. [Authors' summaries modified.] **1463**

I. Chickens of different ages and breeds were given a single i/v injection of bovine serum albumin. Their ability to produce antibodies increased from 6 weeks until about 20–25 weeks of age. Birds 3 to 8 years old developed high titres. No difference due to sex was found. A difference due to breed was found only in the 6-week-old chickens.

II. Very large i/p injections of bovine serum albumin given within 50 hours after hatching reduced the antibody response of chicks to a later injection. The unresponsiveness decreased with age since chickens 12 and 22 weeks of age developed higher titres than those of 6 weeks. The response to a heterologous antigen, human γ-globulin, was not affected.

Erlanger, B. F., Borek, F., Beiser, S. M. & Lieberman, S. (1957). **Steroid-protein conjugates. I. Preparation and characterization of conjugates of bovine serum albumin with testosterone and with cortisone.**—*J. biol. Chem.* **228,** 713-727. [Authors' summary modified.] **1464**

In an attempt to produce substances which could elicit antibodies with antihormonal properties, derivatives of the steroids, testosterone and cortisone, were linked by amide bonds to bovine serum albumin. The preparation of two conjugates of testosterone, one linked through C_3 and the other through C_{17}, and one of cortisone joined through C_{21} is described. These conjugates were analysed and characterized by their ultra-violet and infra-red spectra, electrophoretic behaviour, and by dinitrophenylation studies. It was estimated that at least 20 steroid residues were convalently linked to each molecule of bovine serum albumin. These compounds were antigenic in rabbits. A description of the immunochemical experiments will be published shortly.

La Via, M. F., Robson, M. & Wissler, R. W. (1957). **Modification of antibody response in X-irradiated rats by injection of spleen homogenates.**—*Proc. Soc. exp. Biol., N.Y.* **96,** 667-670. [Authors' summary modified.] **1465**

Antibody formation, which is inhibited by 500 r of total body X-irradiation in the rat, can be restored partially by spleen homogenates injected soon after irradiation. No striking difference in the degree of recovery was observed when spleen cells from rats stimulated earlier with a different antigen were used in place of "normal" spleen cells.

Schwartz, E. E., Upton, A. C. & Congdon, C. C. (1957). **A fatal reaction caused by implantation of adult parental spleen tissue in irradiated F_1 mice.**—*Proc. Soc. exp. Biol., N.Y.* **96,** 797-800. [Authors' summary copied *verbatim.*] **1466**

Implantation into irradiated F_1 hybrids of viable spleen cells from non-irradiated adult mice of the parental strains caused death within 2–4 weeks. The fatal reaction occurred even after sublethal doses of radiation or when the recipients were also injected with marrow cells from isologous hybrids or from mice of the same strain as that from which the parent-strain spleen tissue was obtained. The deaths are ascribed to the formation by the implanted cells of antibodies against the recipient.

Thorbecke, G. J., Gordon, H. A., Wostman, B., Wagner, M. & Reyniers, J. A. (1957). **Lymphoid tissue and serum gamma globulin in young germfree chickens.**—*J. infect. Dis.* **101,** 237-251. [Authors' summary modified.] **1467**

A comparative study was made of the histology of the lymphoid organs and the γ-globulin content of the serum of germ-free and control Leghorn chickens, 2 to 17 weeks old. Special attention was given to the occurrence of plasma cells and secondary nodules in the spleen, liver, thymus, bursa of Fabricius, ileo-caecal-colic junction, and caeca. The germ-free chickens generally showed less development of the lymphoid tissue, fewer plasma cells and secondary nodules, and a lower γ-globulin content in the serum. Secondary nodules were not always

observed in the germ-free animals, but could sometimes be found in the spleen and occasionally also in the ileo-caecal-colic junction, particularly in the older germ-free animals. The lymphoid tissue of the intestinal wall showed the most pronounced differences between germ-free and controls. In the 2- and 4-week-old germ-free chickens, plasma cells and secondary nodules were never observed in the intestinal mucosal lining, while both were abundantly present in this organ in the controls of the same age group. The follicles of the bursa of Fabricius did not show any histological differences between germ-free and controls. It is emphasized that some of these results cannot be easily interpreted because of the lack of information concerning the amount of antigenic contact in germ-free animals.

SEN'KOV, Y. A. (1957). **[Pathology of sequelae to blood transfusion in cattle.]** — *Sborn. nauch. Trud. Leningr. Inst. Usovershenst. vet. Vrach.* **11,** 201-206. [In Russian.] **1468**

S. transfused 20 ml.–2 l. incompatible citrated blood at the rate of 60–65 ml./min. into 20 cattle. The cattle developed transfusion shock, from which they recovered, and were slaughtered after 24 hours for pathological examination. Macroscopic changes in those given more than 160 ml. blood were sub-pleural petechiae often accompanied by pulmonary oedema, and sometimes swelling of the kidneys and petechiae in the heart muscle and liver. Histological changes were haemorrhages in the alveolar walls and interstitial tissue of the lungs, hyperaemia in the kidneys (particularly the cortex) and degenerative changes in the kidney and liver.

A further 3 cattle were given 1,100–1,600 ml. incompatible blood stabilized with 100 ml./l. of a 15% soln. of calcium chloride instead of sodium citrate. The post-transfusion reaction was less severe but the extent of histological lesions was undiminished. There were no histological changes in control cattle transfused with compatible blood.—R.M.

See also absts. **1306-1310** (anthrax); **1322-1323** (TB.); **1326-1328** (swine erysipelas); **1331** (listeriosis); **1349** (indirect haemagglutination in avian salmonellosis); **1350-1368** (brucellosis); **1373-1376** (leptospirosis); **1380** (immunochemistry of 20 vibrios); **1402-1403** (trypanosomiasis); **1415-1429** (rabies); **1421** (reciprocal, between Eastern and Western equine encephalomyelitis in horses and sparrows); **1422** (Murray Valley encephalitis survey in Queensland); **1423** (tick-borne encephalitis antibodies in bats); **1428** (bovine rhinotracheitis vaccine); **1430** (swine fever); **1438** (fowl plague); **1439-1444** (Newcastle disease); **1445** (infectious bronchitis in fowls); **1454** (cross-immunity between dog distemper and rinderpest); **1483, 1484 & 1488** (helminths).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

DEFOLIART, G. R. (1957). **Lice control on northern range herds with residual sprays.**—*J. econ. Ent.* **50,** 618-621. [Author's summary modified.] **1469**

The period of residual effectiveness of chlordane, heptachlor, dieldrin, lindane, Perthane, D.D.T., and malathion for louse control on range beef cattle was determined by observing treated herds up to 6 months after single applications of wettable-powder suspensions. Chlordane 0·5%, heptachlor 0·06%, dieldrin 0·03%, and malathion 0·5% were about equally effective, affording 4 to 5 months of control. This does not represent full seasonal control in Wyoming. The cheapest treatment was with heptachlor. Combinations of chlordane with BHC, lindane, and malathion did not prolong control. Lindane and Perthane were inferior to the other insecticides. Chlordane, dieldrin, and lindane did not kill the eggs. Malathion 0·25% killed 52% of the eggs, and BHC 0·025% gamma isomer killed only a small percentage under field conditions.

I. RAUN, E. S. & HERRICK, J. B. (1957). **Feedlot tests of the efficacy of Dow ET-57 (Trolene) for control of cattle grubs.**—*J. Amer. vet. med. Ass.* **131,** 421-423. **1470**

II. MARQUARDT, W. C. & FRITTS, D. H. (1957). **Control of cattle grubs by an orally administered organic phosphorus compound.** —*Ibid.* 562-563. [Authors' summaries modified.] **1471**

I. 77 steers averaging 883 lb. were given by mouth capsules of Dow ET-57 at the rate of 110 mg./kg. body wt. The animals were observed for 106 days. Counts of *Hypoderma* larvae indicated a total of 49 in the backs of the 77 treated, and 911 in the 77 untreated steers. Treated animals gained 2·48 lb. daily compared with 2·33 lb. for the untreated animals. There was essentially no difference in carcass grades at slaughter. The total saving in feed alone was $3·88 per head, or $298·76 for the 77 treated steers.

II. Of 92 grade Hereford calves 44 were given, by mouth, an average of 130 mg. of Dow ET-57 ("Trolene") at 6 months of age. Counts of *Hypoderma* larvae which appeared in the back were made 5 times from mid-February to early May when the calves were about a year old. The ratio of larvae appearing in the backs of untreated to treated calves was 33:1. One of 47 untreated control calves, as against 43 of 44 treated calves, had fewer than 6 larvae in the

back. No signs of intoxication were observed in the treated calves.

ADKINS, T. R., JR. (1957). **Field evaluations of Dow ET-57 as a systemic insecticide for the control of the common cattle grub in Alabama.**—*J. econ. Ent.* **50**, 474-476. **1472**

In 4 herds of cattle with *Hypoderma lineatum* infestation 115 animals were given a dose of 110 mg. of ET-57 per kg. body wt., either as a drench or a bolus, and 147 animals remained untreated. In the treated animals 87% of the warbles were eliminated.—M.G.G.

HOFFMAN, R. A. & MONROE, R. E. (1957). **Further tests on the control of fly larvae in poultry and cattle manure.**—*J. econ. Ent.* **50**, 515. **1473**

Spraying with diazinon at the rate of 50 ml. of spray containing 25 mg. of insecticide per square foot controlled fly larvae in poultry droppings for 8–9 days. The same concentration of Phosdrin or Dow ET-57 controlled larvae for 3–4 days. In stacked cattle dung diazinon spray killed 95%–100% of larvae when applied at 100 mg. or more per sq. ft., provided that the dried surface was broken up before application. —M.G.G.

MIHAILOV, M. (1957). Nekoliko podataka o raširenosti Ornithodoros lahorensis i pojavi tick paralisis kod ovaca u bitoljskom srezu za vreme 1949-1951 godine. **[Incidence of *Ornithodoros lahorensis* and tick paralysis in sheep in Bitola, Yugoslavia.]**—*Vet. Glasn.* **11**, 814-818. [In Croat.] **1474**

During 1949–51 incidence of tick paralysis in flocks of sheep infested with *Ornithodoros lahorensis* in the Bitola region of Yugoslavia varied from 3–33·3%. The mortality rate in affected sheep was 1·1–16·6%. Infestation was highest about 1–2 months after flocks had been brought in from pasture to be housed for the winter.—E.G.

DAVIS, R. (1957). **Control of the myocoptic mange mite, *Myocoptes musculinus* (Koch), on laboratory mice.** — *J. econ. Ent.* **50**, 695. **1475**

M. musculinus infestation was successfully controlled by dipping the mice once in 2% malathion emulsion.—R.M.

YUNKER, C. E. & ISHAK, K. G. (1957). **Histopathological observations on the sequence of infection in knemidokoptic mange of budgerigars (*Melopsittacus undulatus*).** — *J. Parasit.* **43**, 664-672. [Authors' summary modified.] **1476**

The histopathology and sequence of infection of 3 budgerigars with *Cnemidocoptes pilae* is described. The mite invades feather follicles, skin folds, and smooth epidermis of the face, foot and cere by direct penetration, with subsequent formation of pouch-like cavities. Secondary pouches appear to form from primary pouches by a "budding-off" process, resulting in a lesion honeycombed by numerous cavities, while feeding on keratin. It is noted that early foot infections are unaccompanied by obvious gross signs, resembling in this respect *C. mutans* infections in fowls.

COOK, J. W. (1957). ***In vitro* destruction of some organophosphate pesticides by bovine rumen fluid.**—*J. agric. Fd Chem.* **5**, 859-863. [Author's summary modified.] **1477**

Parathion and three other compounds containing *p*-nitrophenol and the thiono isomer of Systox were rapidly destroyed when 100 p.p.m. each of parathion and nine other phosphate parasiticides were added to aliquots of bovine rumen fluid. Metabolism of parathion in the rumen can account for its apparent lack of toxicity to cattle as reported in the literature.

See also absts. **1423** (tick-borne encephalitis antibodies in bats); **1644** (report, Canada).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

STANIVUKOVIĆ, M. (1957). Doprinos lečenju fascioloze ovaca subkutanom aplikacijom carbonei tetrachloridum. **[Treatment of fascioliasis in sheep by subcutaneous injection of CCl_4.]**—*Vet. Glasn.* **11**, 826-828. [In Croat.] **1478**

An account of effective control of fascioliasis in 4,412 sheep, by s/c inj. of 3–5 ml. of CCl_4, which, apart from causing excitement after injection, was well tolerated even by pregnant ewes and sheep in poor condition.—E.G.

CHERNIN, E. (1957). **Studies on the control of schistosome-bearing snails. VII. Streptomycin-induced inhibition of growth and reproduction in the schistosome-bearing snail, *Australorbis glabratus*.** — *Amer. J. Hyg.* **66**, 321-330. [Author's summary modified.] **1479**

Small amounts of streptomycin inhibited the growth and reproduction of *Australorbis glabratus* in an aquarium. The antibiotic had a "residual" toxicity for the snails which persisted for several weeks after introduction of 50 to

100 μg. per ml. into aquarium water. The peculiar behaviour exhibited by snails exposed to streptomycin is described. The effects of inorganic salts in preventing the appearance of this behaviour, and in partially blocking the effects on growth, are noted. Streptomycin probably acts directly upon the snails rather than in some intermediary fashion, and its growth-inhibitory effects may be secondary to anorexia. This is believed to be the first report of streptomycin-induced inhibition of growth and reproduction in a metazoan species.

GOMUL'KIN, A. A. (1957). **[Needle puncture and the creation of fistulas of the gall-bladder in the cow.]**—*Sborn. nauch. Trud. Leningr. Inst. Usovershenst. vet. Vrach.* **11**, 185-191. [In Russian.] **1480**

The skin site for gall-bladder puncture was on the right side either at the anterior edge of the 11th rib, level with the tubercle of the scapular spine, or at the posterior edge of the same rib, level with the tubercle of the spine or 2–3 cm. above it. In the first position, the needle was aimed in the direction of the left patella and inserted about 5 cm. In the second position it was aimed at the left elbow and inserted about 7–9 cm. By examining the bile obtained it was easy to diagnose *Fasciola* and *Dicrocoelium* infestations.

For the creation of a fistula, laparotomy was performed at the 11th intercostal space, and a plastic or rubber cannula was inserted.—R.M.

CHUBABRIYA, I. T. (1957). **[A new anthelmintic: tin arsenate.]**—*Veterinariya, Moscow* **34**, No. 12. pp. 70-73. [In Russian.] **1481**

Tin arsenate was a reliable anthelmintic against *Moniezia* and *Thysanosoma* in sheep, *Moniezia* and *Bunostomum* in calves, *Drepanidotaenia* in geese, and ascarids and cestodes in birds. It acted on adult and young forms of these helminths. Single doses of 0·3–0·4 g. for lambs and 0·03–0·2 g. for fowls were given by mouth after starvation for 18 hours. Tablets were preferred to gelatin capsules. [See also *V.B.* **28**, 803.]—R.M.

RUKAVINA, J., DŽUMUROV, N. & DELIĆ, S. (1957). Larve Diphyllobothrium erinacei Europaei kod svinja. **[Larvae of *Diphyllobothrium erinacei* (*Sparganum raillieti*) in pigs.]**—*Veterinaria, Sarajevo* **6**, 46-55. [In Croat. English summary.] **1482**

In the Pannonian Plain of Yugoslavia, *Sparganum raillieti* plerocercoids were present in the thigh muscles of 27 of 47 pigs. There were about 15 larvae per 250 g. of muscle. Tongue, masseter and intercostal muscles were not infested. Adult worms were recovered from a dog fed infested meat.—E.G.

VOGEL, H., WIDELOCK, D. & FUERST, H. T. (1957). **A microflocculation test for trichinosis.**—*J. infect. Dis.* **100**, 40-47. [Authors' summary modified.] **1483**

An account of a new flocculation test for the serological diagnosis of trichinosis. The antigen emulsion is easily prepared from materials of known concentration. The test was more specific although less sensitive than the complement-fixation test or the flocculation test described by Bozicevich *et al.* [*V.B.* **22**, 2546]. Negative results were easily determined owing to the greater homogeneity of negative reactions. Since serological examination may be negative shortly after onset of the disease, it is important to repeat such examinations periodically, up to 9 weeks after the appearance of symptoms.

CHIPMAN, P. B. (1957). **The antigenic role of the excretions and secretions of adult *Trichinella spiralis* in the production of immunity in mice.**—*J. Parasit.* **43**, 593-598. [Author's summary modified.] **1484**

Antigenic material associated with the excretions and secretions of adult *T. spiralis* was collected by incubating the worms in a nutrient fluid for 2 days. When used unaltered and given in small daily injections, it produced an immunity in mice as revealed after certain infections by the presence of significantly smaller worm burdens (adults and larvae) than those in controls. Twelve injections were required to demonstrate a reduction in the number of adult worms, whereas a reduction in the number of larvae was noted after both 6 and 12 injections. The adult phase of *T. spiralis*, as well as the pre-adult phase (as reported earlier), therefore contributes to the total immunity produced by the host.

SHELTON, G. C., MOLES, A. & DYER, A. J. (1957). **Parasitism in sheep on irrigated pastures.**—*J. Amer. vet. med. Ass.* **131**, 315-317. **1485**

There was heavy worm infestation and mortality in ewes and lambs on irrigated pasture, although a phenothiazine–salt mixture was always available and doses of phenothiazine or copper sulphate plus nicotine sulphate were given every 2 weeks. Possible reasons for the disappointing results are: lack of pasture rotation, high humidity, cool weather from spring to midsummer, development of heavy infestation before

the lambs began to eat sufficient of the phenothiazine mixture, and resistance of *Haemonchus contortus* to phenothiazine.—M.G.G.

LELAND, S. E., JR., DRUDGE, J. H., WYANT, Z. N. & ELAM, G. W. (1957). **Strain variation in the reponse of sheep nematodes to action of phenothiazine. III. Field observations.**—*Amer. J. vet. Res.* **18,** 851-860. **1486**

Drenching with phenothiazine plus lead arsenate or copper sulphate plus nicotine sulphate reduced nematode egg counts in 2 flocks of sheep. But in a third flock, where phenothiazine had been used for 10 years, drenches with this drug (25 g. per animal) had no effect. In this flock only copper sulphate or copper sulphate plus nicotine sulphate drenches reduced egg counts. It is concluded that the worms (*Haemonchus contortus* and *Strongyloides*) became tolerant to the drug. Alternate drenches with phenothiazine and copper sulphate plus nicotine sulphate are recommended for flocks with a history of parasite problems; a phenothiazine–salt mixture should also be provided.—M.G.G.

LUCAS, A. & LAROCHE, M. (1957). Le tétrachlorure de carbone dans la thérapeutique anthelminthique aviaire. III. Son action dans la trichostrongylose caecale épizootique. **[Carbon tetrachloride as an anthelmintic for birds. III. Against caecal trichostrongylosis.]** —*Rec. Méd. vét.* **133,** 659-662. **1487**

For 3 consecutive days 0·03125 ml. of carbon tetrachloride, diluted fourfold in liquid paraffin, was given orally in capsule form to a partridge with *T. tenuis* infestation. The number of eggs per g. of faeces fell from 10,000 to 3,000. A second treatment 2 weeks later reduced the count to 800 e.p.g., and a third treatment reduced it to 200 e.p.g. A similar course of treatment is recommended for other species of birds, the daily dose being 0·125 ml. for birds weighing 500–1000 g. and 0·25 ml. for those weighing 1–2 kg.—M.G.G.

SOULSBY, E. J. L. (1957). **Precipitin and intradermal tests in *Ascaris lumbricoides* infection in pigs.**—*Brit. vet. J.* **113,** 492-498. [Author's summary modified.] **1488**

Skin and precipitin tests were made on 273 pigs which afterwards were examined post-mortem. No correlation existed between the presence of positive reactions and the presence of adult worms in the bowel, but the incidence of positive reactions increased with the severity of chronic focal interstitial hepatitis. The significance of positive reactions in relation to the development of these lesions is discussed.

NORTON, S. & DE BEER, E. J. (1957). **Investigations on the action of piperazine on *Ascaris lumbricoides*.**—*Amer. J. trop. Med. Hyg.* **5,** 898-905. **1489**

Piperazine paralysed *A. lumbricoides* by blocking the neuromuscular junction.—R.M.

GUTHRIE, J. E. & BRIGGS, J. E. (1957). **Ascaricidal activity of piperazine administered in the feed to swine.**—*J. Anim. Sci.* **16,** 943-945. **1490**

The piperazine compounds tested were the phosphate, the dihydrochloride and the sulphate. Each drug was mixed with the food in a concentration to maintain a uniform level of anhydrous piperazine. The dihydrochloride and the phosphate were slightly more effective than the sulphate. Results with the three compounds at various levels are given in tabular form.

—T.E.G.R.

ALICATA, J. E. (1957). **Observations on the ineffectiveness of "Polybor-3" in destroying the vitality of the eggs of *Ascaris suum* in soil.**—*J. Parasit.* **43,** 193. **1491**

"Polybor-3" (a mixture of sodium pentaborate tetrahydrate and sodium tetraborate pentahydrate) sprayed at the rate of 22·7 g. in 113 ml. of water per sq. foot on soil containing pig ascarid eggs, had no effect on the development of the eggs nor on their infective power as shown by feeding to g.pigs. The author had previously reported [see *V.B.* **23,** 3423; **24,** 1948] that the preparation was effective in controlling *Stephanurus dentatus*.—D. POYNTER.

STOROZHEVA, A. M. (1957). **[*Physocephalus sexalatus* infestation in domestic fowls, ducks and geese.]**—*Veterinariya, Moscow* **34,** No. 10. pp. 47-49. [In Russian.] **1492**

Larvae of *Ph. sexalatus* were found encapsulated in the wall of the intestine in nearly all fowls, 25% of ducks and 5% of geese examined *post mortem* at Minsk. Sometimes there were were 200–250 larvae/sq. cm. of intestine: they sometimes caused great enlargement of the testicles. The final host of this nematode is mainly the pig.—R.M.

LANCASTER, W. E. (1957). **A check list of helminths of domestic livestock in Malaya.**—*J. Malay. vet. med. Ass.* **1,** 151-163. [Author's summary modified.] **1493**

A check list of helminths that have been recorded from domestic livestock and fowls in Malaya is presented. Mention is made of the recent discovery [see *V.B.* **26,** 2017] of filarial worms of the genus *Wuchereria* in animals.

HALAŠA, M., LÜBKE, R. & ROŠKO, L. (1957). O rozšírení motoličnosti a plúcnej červivosti oviec a hovädzieho dobytka na Slovensku a perspektívy boja proti nim. **[Incidence and control of fascioliasis and lungworms in sheep and cattle in Slovakia.]**—*Vet. Čas.* **6,** 293-304. [In Slovak. English, French, German and Russian summaries.] **1494**

Of 927 herds of cattle examined in 1956 in Slovakia, 615 were affected with fascioliasis. In samples of organs and faeces from individual cattle *F. hepatica* or ova were present in 2,316 of 7,232. Of 603 flocks of sheep 382 were affected with *F. hepatica* and 424 with *Dicrocoelium lanceolatum*. *Muellerius capillaris* was present in 299, *Dictyocaulus* in 166 and *Protostrongylus kochi* in 166 of 611 flocks investigated. Of 13,038 samples from individual sheep 3,400 were infested with *Fasciola* and 1683 with *Dicrocoelium*. Of 12,777 samples 2,225 were infested with *Muellerius*, 1,524 with *Protostrongylus* and 906 with *Dictyocaulus*. The need for effective control measures was discussed.—E.G.

MCCOWEN, M. C., CALLENDER, M. E. & BRANDT, M. C. (1957). **The anthelmintic effect of dithiazanine in experimental animals.**—*Amer. J. trop. Med. Hyg.* **5,** 894-897. [Authors' summary modified.] **1495**

Dithiazanine [3,3'diethylthiadicarbocyanine iodide] was highly effective by oral administration against pinworms in mice, ascarids, hookworms, and whipworms in dogs, as well as ascarids and hookworms in cats.

See also absts. **1314** (specificity of tuberculin test in cattle with fascioliasis); **1646** (report, Czechoslovakia).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

ANDERSON, D. E., CHAMBERS, D. & LUSH, J. L. (1957). **Studies on bovine ocular squamous carcinoma ("cancer eye"). III. Inheritance of eyelid pigmentation.**—*J. Anim. Sci.* **16,** 1007-1016. [Authors' summary modified.] **1496**

Data of eyelid pigmentation of 1117 offspring (by 116 sires) and 513 of their dams were studied. Heritability estimated from the regression of 733 offspring on dam was 0·44. The paternal half-sib intra class correlation for 953 offspring was 0·46. It is considered that the incidence of cancer eye can be reduced by selective breeding.

COLOMBO, S. & VACIRCA, G. (1957). Contributo alla conoscenza delle neoplasie primitive maligne della milza nel cane. Studio clinico ed anatomo-istopatologico di un sarcoma fusi-polimorfo cellulare. **[Primary malignant neoplasms of the spleen in dogs. Clinical study and histopathology of a spindle-celled sarcoma.]** — *Clin. vet., Milano* **80,** 289-299. [English summary.] **1497**

An account of a mixed spindle-celled sarcoma in a dog aged 3½ years. The primary tumour was in the spleen with metastases in the lymph nodes, lungs, adipose tissue and spleen. —T.E.G.R.

KENT, S. P. & PICKERING, J. F. (1958). **Neoplasms in monkeys (*Macaca mulatta*): spontaneous and irradiation induced.** — *Cancer, Philad.* **11,** 138-147. **1498**

Nine neoplasms were found in P.M. examinations of 450 monkeys. Six of them were spontaneous and the remaining 3 were associated with high doses of focal ionizing radiation. A glioblastoma multiforme and a malignant lymphoma had not previously been reported as occurring in monkeys.—R.M.

SOUTHAM, C. M. & PILLEMER, L. (1957). **Serum properdin levels and cancer cell homografts in man.**—*Proc. Soc. exp. Biol., N.Y.* **96,** 596-601. [Authors' summary modified.] **1499**

Low levels of serum properdin were found in patients with advanced cancer whose ability to reject cancer cell homografts was defective. Normal properdin levels were observed in normal persons who rejected such homografts promptly. Investigation of cellular and humoral defence mechanisms other than properdin has so far revealed no differences which might explain the impaired rejection of implanted cells by the cancer patients.

HUTT, F. B. & COLE, R. K. (1957). **Control of leukosis in the fowl.**—*J. Amer. vet. med. Ass.* **131,** 491-495. [Authors' summary modified.] **1500**

By selection of genetically resistant stock, two strains of White Leghorns have been developed in which mortality from leucosis, in birds adequately exposed, is now 0·8 to 1·5%. At the same time, in a strain bred for susceptibility to the complex, average mortality from leucosis was 38·8%, much of it of the neural type. It has been shown that both genetic resistance to leucosis and ability to lay can be raised concurrently, the resultant strain having higher viability and greater productivity. A considerable measure of

control can be effected by brooding the chicks in isolation, as far as possible from older birds, during the critical first few weeks after hatching. Experiments with isolated stock indicate that any transmission there may be of causative agents through the egg is relatively unimportant in comparison with the degree of genetic susceptibility and the severity of exposure to the disease after hatching.

BURMESTER, B. R. (1957). **Recent studies on the natural transmission of visceral lymphomatosis in chickens.**—*J. Amer. vet. med. Ass.* **131**, 496-499. [Author's summary modified.] **1501**

It has been demonstrated that a high proportion of hens of a flock may have an inapparent infection with the virus of visceral lymphomatosis (VL). Such hens may remain healthy for long periods and shed infective levels of virus in their eggs, saliva, and faeces. Hens with inapparent infection may have circulating antibodies which are also transferred to their eggs, giving some protection to their progeny. However, such progeny shed virus in their saliva and faeces, contaminating the incubator and brooder units. This provides a source of infection for the more susceptible birds, in the same unit, the progeny of hens without appreciable antibody levels. When the virus is applied to the mucous membranes of any of the natural body openings, VL will result. Experiments indicate that drinking water may play an important role in transmission within the brooder unit. The faeces and saliva of infected adults seem to be unimportant sources of infection in the natural transmission of the disease. Live-virus vaccines containing chick embryo materials may be contaminated with sufficient VL virus to cause an increase in the occurrence of the disease in the chickens vaccinated.

NUTRITIONAL AND METABOLIC DISORDERS

MAMEDOV, D. M. (1957). **[Changes in energy metabolism in sheep related to the circumstances and time of feeding.]**—*Sechenov. J. Physiol.* **43**, 1195-1201. [In Russian. English summary.] **1502**

The rate of energy metabolism of lambs feeding in a room where they were accustomed to feeding, was higher than that of lambs offered food in buildings to which they were not accustomed: the change disturbed the system of conditioned reflexes associated with feeding. Sheep fed hay became adapted to a new feeding place after 27 days, while sheep fed concentrates took 31 days to become adapted. Energy metabolism at feeding time was higher than at 2–4 hours before feeding time; this indicated the establishment of conditioned reflexes associated with time.

—R.M.

GRAU, C. R. & KLEIN, N. W. (1957). **Sewage-grown algae as a feedstuff for chicks.**—*Poult. Sci.* **36**, 1046-1051. **1503**

Algae meal produced from sewage contains carotenoids and about 40% protein. Chicks tolerated 20% of it in the diet when it was prepared by centrifuging, but algae extracted by flocculation with alum and containing 8% aluminium depressed growth even at 10% of the diet. Meal containing only 3·5% aluminium was suitable for replacing the 14% soya bean oil meal in a practical diet, but growth was poor when it was used to supplement soya bean oil meal with no other source of protein.—M.G.G.

BLAKE, J. T., JACOBSON, N. L. & ALLEN, R. S. (1957). **Effectiveness of various measures in bloat therapy and prophylaxis, and the resulting influence on rumen fluid characteristics.**—*Amer. J. vet. Res.* **18**, 756-760. [Authors' summary modified.] **1504**

An alkyl aryl sodium sulphonate detergent was administered in gelatin capsules to 22 beef cattle on lucerne pasture. The dosage was 20 or 30 g. daily per 1,000 lb. body wt. Only the higher dosage reduced the incidence and severity of bloat. During bloat, the volume of ingesta, foam durability, and degree of foaminess increased, surface tension and viscosity increased slightly, while specific gravity and pH fell. All these characteristics were reversed by the detergent. Trisodium phosphate, 30 g. daily, was not effective. Grazing habits were not altered noticeably by the detergent or trisodium phosphate. Neither cholesterol nor the detergent effectively reduced bloat or greatly altered the rumen fluid characteristics when added to lucerne juice before administration.

ROBINSON, J. R. (1957). **Functions of water in the body.**—*Proc. Nutr. Soc.* **16**, 108-112. **1505**

R. outlined the main functions of water in the body, pointing out its suitability as a medium in which the metabolic processes of living cells can take place. He stressed the importance of the osmotic pressure of extracellular fluid and described the mechanisms by which it is kept constant and the results of their failure.

—E. J. CASTLE.

GOLUBEVA, E. D. (1957). **[Suitability of highly mineralized artesian water as drinking water for pigs.]** — *Sborn. nauch. Trud. Leningr. Inst. Usovershenst. vet. Vrach.* **11**, 36-42. [In Russian.] **1506**

Water containing 2·5–3·5 g./l. chlorides and 500 mg./l. sulphates did not visibly affect the health of fattening and adult pigs when used as drinking water. Ingested chlorides did not accumulate in the blood, but were excreted in the urine. Such water did have a harmful action on unweaned and weaned piglets, causing disturbances of digestive function, skin rash with itching, and reduction of growth rate.—R.M.

RAICA, N., HEYWANG, B. W., VAVICH, M. G. & KEMMERER, A. R. (1957). **The effect of fluoridated water on chick growth.**—*Poult. Sci.* **36**, 1027-1030. **1507**

Water containing up to 100 p.p.m. sodium fluoride had no significant effect on the growth, water consumption and bone ash of chicks drinking it for 6–10 weeks.—M.G.G.

ELKINTON, J. R. (1957). **The relationship of water and salt.**—*Proc. Nutr. Soc.* **16**, 113-118. **1508**

Sodium is the chief cation in extracellular fluid and potassium the chief one wtihin the body cells. The ionic pattern of extracellular fluid is similar to that of sea water. An account is given of present information as to how the differential distribution of potassium and sodium is kept steady and how a constant salt and water relationship is maintained. Water deprivation alone is not as serious as the withdrawal of sodium in excess of water or of water deprivation with the administration of extra salt.—E. J. CASTLE.

I. WIDDOWSON, E. M. (1957). **Water equilibrium in health.**—*Proc. Nutr. Soc.* **16**, 118-123. **1509**

II. BLACK, D. A. K. (1957). **The breakdown of the water equilibrium in disease.** — *Ibid.* 123-128. **1510**

III. YOUNG, W. F. (1957). **The restoration and maintenance of water equilibrium in disease.**—*Ibid.* 128-134. **1511**

I. A brief description is given of the main ways in which water is taken in and lost by man. A baby must consume a much greater quantity in relation to size than an adult as its losses are greater and its powers of concentration less. The effects of dehydration and survival at sea are discussed. The author considers it wrong to drink sea water.

II. An account is given of the causes, effects and clinical recognition of primary water depletion and excess. It is pointed out that these states are not so common as alterations in the water contents of the body secondary to electrolyte depletion or excess.

III. A brief guide is given to the assessment of the dehydrated patient's requirements. Treatment should be aimed at restoring the circulating blood volume and a free flow of urine as quickly as possible by the administration of water and in most cases sodium salts, orally or in bad cases, intravenously. This should be followed by the restoration of the volume and distribution of total body fluids by giving excess water and sodium salts. Potassium is given more slowly to replace intracellular losses. A description is given of the treatment of dehydration in infants and children.
—E. J. CASTLE.

BELL, M. C., TAYLOR, J. R. & MURPHREE, R. L. (1957). **Effect of feeding stilbestrol and urea on ration digestibility and on retention of calcium, phosphorus, and nitrogen in lambs.** —*J. Anim. Sci.* **16**, 821-827. **1512**

Stilboestrol was added to a ration containing urea or cotton-seed meal as protein supplement. There was a significantly greater digestibility of crude protein and a significantly lower digestibility of ether extract from the rations containing urea than those containing cotton-seed meal. Stilboestrol, with either ration, caused an immediate increase in nitrogen retention and had a delayed effect on the metabolism of calcium and phosphorus.—T.E.G.R.

HOGUE, D. E., WARNER, R. G., LOOSLI, J. K. & GRIPPIN, C. H. (1957). **Comparison of antibiotics for dairy calves on two levels of milk feeding.**—*J. Dairy Sci.* **40**, 1072-1078. **1513**

96 Holstein heifer calves were fed either 350 lb. milk over 7 weeks or 175 lb. milk over 5 weeks with or without chlortetracycline, bacitracin–penicillin or streptomycin, fed at 3 different levels, 10, 20 or 40 mg. per 100 lb. live weight daily for a period of 7 or 16 weeks. The calves receiving 175 lb. of milk failed to grow as well as those receiving 350 lb. during the first 7 weeks, but this difference was greatly reduced, and their food consumption and feed efficiency increased over this period, by the feeding of chlortetracycline. Streptomycin was almost equally effective but the bacitracin–penicillin was not so. The level and period of feeding of the antibiotics did not affect the results. All the antibiotics were equally efficient in reducing the incidence of scouring.
—E. J. CASTLE.

LUCAS, I. A. M. & CALDER, A. F. C. (1957). **The effect of housing on the response of**

growing pigs to dietary supplements of antibiotic and of certain vitamins.—*Proc. Nutr. Soc.* **16,** No. 2. p. iv. of Proceedings. **1514**

Sixty-four pigs of average weight 39 lb. were kept either in cool (44°F.) or warm (60°F.) pens. Those in the cool pens had rates of live-weight gain and feed efficiency respectively 11 and 15% lower than the others, but these differences were reduced to 7 and 10% when additional riboflavin, calcium pantothenate and ascorbic acid was added to the diet. The addition of procaine penicillin improved live-weight gain and feed efficiency by 3% irrespective of housing.

—E. J. Castle.

Dick, E. C. & Johansson, K. R. (1957). **Effects of oral and parenteral administration of degraded and active antibiotics to rats fed a vitamin B_{12} deficient ration. II. Indirect evidence for an extra-intestinal cause of growth stimulation by antibiotics.**—*Antibiot. & Chemother.* **7,** 349-358. [Spanish summary p. 395. Authors' summary modified.] **1515**

Various antibiotics were administered to rats fed a diet deficient in vitamin B_{12}. There was little correlation between the intestinal concentration of the antibiotics and the degree of growth enhancement. In some trials parenteral administration was as effective as oral administration in stimulating growth. I/p injection of a highly insoluble antibiotic, carbomycin B, increased growth without concomitant changes in the intestinal microflora, but had no influence on growth when administered orally, despite alterations in the caecal and ileal microflora.

Lüick, J. R., Kleiber, M., Lucas, J. M. & Rogers, T. A. (1957). **Fructose metabolism in dairy cows.**—*Amer. J. Physiol.* **191,** 90-94. **1516**

The authors examined the problem of hepatic versus extrahepatic metabolism of fructose in lactating dairy cows, with the aid of C^{14}-labelled fructose. It was rapidly converted to blood glucose, and the rate of metabolism of fructose was faster than that of glucose: these findings were the same as those applicable to non-ruminants. Extrahepatic metabolism of fructose appeared to be of considerable importance in cows.—R. M.

Dollar, A. M., Mitchell, K. G. & Porter, J. W. G. (1957). **The utilization of carbohydrates in the young pig.**—*Proc. Nutr. Soc.* **16,** No. 2. pp. xii-xiii. of Proceedings. **1517**

Aqueous solutions of sugars were given orally to young pigs. Estimations of the reducing sugar in the blood showed that the new-born pig can utilize only lactose and glucose, but that it develops an ability to assimilate sucrose, maltose and dextrin during the first 10 days of life.

—E. J. Castle.

Deutsch, H. F. & Smith, V. F. (1957). **Intestinal permeability to proteins in the newborn herbivore.**—*Amer. J. Physiol.* **191,** 271-276. [Authors' summary modified.] **1518**

The permeability of the gut of the new-born herbivore to the protein molecules of milk whey is largely lost within 24 hours after birth. All of the colostrum whey proteins, not only the antibody fraction, are absorbed during this stage of intestinal permeability. The non-antibody proteins have a relatively low molecular wt.; they are rapidly excreted through the kidney, the antibodies being largely retained. Crystalline β-lactoglobulin may be prepared from urine during the proteinuric stage which is very pronounced during the first 24 hours of life in calves that have had ready access to milk. Attempts to maintain the intestinal permeability beyond the first 24 hours of life were unsuccessful.

Knowles, C. B. (1957). **Protein malnutrition in the pig.**—*Proc. Nutr. Soc.* **16,** No. 2. pp. ix-x. of Proceedings. **1519**

Young pigs fed on a diet containing 4·5–6·5% protein, from 13 days of age, failed to grow and showed signs of severe protein deficiency after 3–4 months and died after 4–6 months. The symptoms and various haematological and P.M. findings are described. The response to water load was not normal. Death occurred at a much later stage when the low protein diet was not started until the pigs were older.—E. J. Castle.

Pellett, P. L. (1957). **Level of protein in the diet and apparent nitrogen digestibility in the pig.**—*Proc. Nutr. Soc.* **16,** No. 2. pp. x-xi. of Proceedings. **1520**

The apparent digestibility of nitrogen in a pig maintained on a 4·5% protein diet for over 6 months was 56%. This rose to 80% immediately the protein content of the diet was increased to 7·5%, but it was several weeks before it returned to 56%, once the low protein diet had been resumed.—E. J. Castle.

Vohra, P. & Kratzer, F. H. (1957). **The essential nature of lysine in the prevention of feather depigmentation of turkey poults.**—*Arch. Biochem.* **68,** 76-80. **1521**

Metabolites of lysine did not prevent depression of growth and depigmentation of feathers caused by lysine deficiency.—R.M.

LUICK, J. R., BODA, J. M. & KLEIBER, M. (1957). **Some biokinetic aspects of calcium metabolism in dairy cows.**—*Amer. J. Physiol.* **189,** 483-488. [Authors' summary modified.] **1522**

A study was made to determine how cows which had been fed diets low in Ca and high in P were better able to maintain normal serum calcium levels than cows fed diets high in Ca and low in P. Radioactive calcium was used as a tracer in the estimation of skeletal reserves of available calcium. The skeletal reserves were larger and changed more slowly in cows fed diets low in Ca and high in P. Comparison of the radioactivity of bone and serum revealed that all the Ca in trabecular bone and 7–17% of that in cortical bone could be mobilized for circulation in the blood.

AMMERMAN, C. B., FORBES, R. M., GARRIGUS, U. S., NEWMANN, A. L., NORTON, H. W. & HATFIELD, E. E. (1957). **Ruminant utilization of inorganic phosphates.**—*J. Anim. Sci.* **16,** 796-810. **1523**

Phosphorus balance and inorganic phosphorus levels in the blood were the criteria in this study of the availability of various inorganic phosphates for steers and lambs. Yearling steers, after 4 months on a low-phosphorus diet, were fed 1·7 g. (50% inorganic) or 1·0 g. (66% inorganic) phosphorus per 100 lb. body wt. Weanling lambs, depleted of phosphorus by feeding a semi-purified ration containing about 0·03% organic phosphate, were fed rations containing 0·13–0·16% phosphorus (80% inorganic). The phosphates under investigation were equally effective in promoting the retention of phosphorus and the maintenance of phosphorus levels in the blood in steers. In lambs utilization of dicalcium phosphate and Curaçao Island phosphate was good but poor in the case of soft phosphate and calcined defluorinated phosphate. Vitreous calcium metaphosphate was utilized to some extent but significantly less than monocalcium phosphate.—T.E.G.R.

SKERMAN, K. D. & SUTHERLAND, A. K. (1957). **An occurrence of cobalt deficiency in lambs in the Dandenong Ranges, Victoria.**—*Aust. vet. J.* **33,** 197-201. **1524**

Each year the lambs became unthrifty soon after weaning, then developed black scours, and many died. Cobalt and/or copper deficiency and worm infestation were suspected of causing the condition. Consequently all lambs were dosed initially, and at monthly intervals thereafter, with 30 g. phenothiazine, and each week moved to rested pastures. Twenty lambs were divided into 2 groups, A and B. Group B were given cobalt at the rate of 7 mg. cobalt sulphate per lamb per week. In both groups scouring ceased by the end of the 8th week, and liver biopsies showed good copper status with no difference between groups. At 13 weeks Group B showed higher haemoglobin concentration than Group A, and had gained an average of 15·6 lb. per lamb, and Group A only 0·9 lb. After the 13th week Group A was given cobalt sulphate (7 mg. per lamb per week) and vitamin B_{12} injections. The lambs immediately adopted and maintained a growth rate parallel to that of Group B.

—A. CULEY.

BURLEY, R. W. & DE KOCK, W. T. (1957). **Comparison of the N-terminal amino acid residues in wool from normal and copper-deficient sheep.**—*Arch. Biochem.* **68,** 21-99. [Authors' summary modified.] **1525**

Wool from copper-deficient sheep contains more N-terminal glycine, alanine and sometimes serine and glutamic acid than wool from normal sheep, according to the method described by Sanger & Tuppy [*Biochem. J.* **49,** 463 (1951)]. The extra end groups appear to be in less accessible regions of the Cu-deficient fibres, but are readily accessible after heating in aqueous phenol. The different Cu contents of the two sorts of wool did not affect the results for N-terminal groups.

LUCAS, I. A. M. & CALDER, A. F. C. (1957). **A comparison of five levels of copper sulphate in rations for growing pigs.**—*Proc. Nutr. Soc.* **16,** No. 2. pp. i-ii of Proceedings. **1526**

48 fattening pigs were fed on a meal containing nil, 0·012, 0·025, 0·05, 0·1 or 0·2% $CuSO_4 5H_2O$. The pigs on the 0·2% treatment had the greatest improvement in live-weight gain and feed efficiency under 100 lb. live wt., but between 100 and 200 lb. the supplement caused no improvement in performance. Pigs receiving the 0·2% $CuSO_4 5H_2O$ had the lowest killing-out percentages and back fat measurements.

—E. J. CASTLE.

MAYO, R. H., PLUMLEE, M. P. & BEESON, W. M. (1957). **The magnesium requirement of swine weaned at three and nine weeks of age.**—*J. Anim. Sci.* **16,** 1038-1039. **1527**

Magnesium was fed to three-week-old pigs at 1 and 340 p.p.m. and at 1, 68, 136, 204, 272 and 340 p.p.m. It was fed to eight-week-old pigs at 1, 90, 180, 270, 360 and 450 p.p.m. From data obtained it is considered that the minimum requirement for optimum growth and feed utilization is 270 p.p.m.—T.E.G.R.

VITALE, J. J., NAKAMURA, M. & HEGSTED, D. M. (1957). **The effect of magnesium deficiency on oxidative phosphorylation.** — *J. biol. Chem.* **228,** 573-576. [Authors' summary modified.] **1528**

Magnesium deficiency in young rats caused uncoupling of oxidative phosphorylation in heart mitochondria within 4 days and a maximal effect within 8 days. Liver and kidney mitochondria were less sensitive and only small decreases in the $P:O_2$ ratio were observed. Heart mitochondria are also particularly sensitive to thyroxine administration. A maximal decrease in the $P:O_2$ ratio was observed within 10 min. after a thyroxine injection and lasted less than 30 min. The uncoupling action of thyroxine was prevented by a preliminary injection of Mg.

ROBERSON, R. H., SCHAIBLE, P. J. & JOHNSON, K. E. (1957). **The removal of zinc from solution by calcium and phosphorus supplements.**—*Poult. Sci.* **36,** 1153. **1529**

Zinc was removed from solutions containing 43 and 109 p.p.m. when these were shaken for 1½ hours with calcium and phosphorus supplements. This may account for zinc deficiency in animals whose diet is rich in minerals.—M.G.G.

FERREIRA NETTO, J. M., CARNEIRO VIANA, J. A. & MOREIRA, H. A. (1956). Tempo de coagulação sanguínea em pintos com perose por deficiência de manganês. **[Blood clotting time in chicks with perosis due to manganese deficiency.]**—*Arch. Esc. Vet. Minas Gerais* **9,** 121-125. [Abst. from English summary.] **1530**

In chicks fed a manganese deficient diet for 6 weeks to produce perosis the blood coagulation time was significantly retarded (8·7 min. on average against 2·8 min. for controls).

DOBSON, A. & PHILLIPSON, A. T. (1958). **The absorption of chloride ions from the reticulo-rumen sac.** — *J. Physiol.* **140,** 94-104. [Authors' summary slightly modified.] **1531**

Potential gradients within the contents of the reticulum and rumen and within the blood are small. A potential makes the blood about 30 mV positive with respect to reticulo-rumen contents both in conscious sheep with normal rumen contents and in anaesthetized sheep with artificial solutions in the rumen. Chloride absorption from the reticulo-rumen sac takes place down its electrochemical gradient. It is concluded that the movement of chloride against its concentration gradient from the rumen contents into the plasma occurs because of the potential difference between these two phases.

VOHRA, P. & KRATZER, F. H. (1957). **The effect of dietary copper and molybdenum on turkey poults.** — *Poult. Sci.* **36,** 1096-1098. **1532**

Addition of 910 p.p.m. of Cu to the diet did not prevent feather depigmentation in poults deficient in lysine. Interference with Cu utilization through the addition of 1,000 p.p.m. of Mo to the diet caused no depigmentation in poults receiving adequate lysine.—M.G.G.

PATRICK, H. & BACON, J. A. (1957). **The effect of vitamin D upon bone mineralization of Ca^{45} and Sr^{89} as chlorides and as phosphopeptides.** — *J. biol. Chem.* **228,** 569-572. [Authors' summary modified.] **1533**

Rats utilized Ca^{45} or Sr^{89} in the form of a phosphopeptide more efficiently than the inorganic salts of these elements with or without vitamin D. But vitamin D increased the efficiency of utilization of Ca and Sr in both the organic and inorganic forms in rats and chicks. Chicks, however, could not utilize Ca or Sr in the phosphopeptide form in the absence of vitamin D as efficiently as the inorganic salts in the absence of vitamin D. The need for vitamin D in Ca and Sr usage is greater in chicks than in rats.

BLAXTER, K. L. (1957). **Myopathic conditions in animals.**—*Vet. Rec.* **69,** No. 49. Pt. 2. pp. 1150-1155. Discussion: pp. 1155-1159. [Author's summary modified.] **1534**

B. described 7 syndromes in cattle and sheep: — unsaturated fatty acid toxicity, usually met under field conditions when cod-liver oil is given; the enzootic muscular dystrophy of beef cattle of N.E. Scotland; the stiff lamb disease occurring after in-wintering of ewes; a comparable disease occurring at pasture in New Zealand; the white muscle disease of Oregon; muscular degeneration in hoggs in Scotland; and the generalized myopathy of adult sheep described by Bosanquet, *et al.* (1956) [*V.B.* **27,** 2182]. These diseases cannot usually be distinguished on clinical, pathological or histopathological grounds alone, because muscle appears to have only a limited range of response to many different factors. This necessarily places considerable emphasis on their aetiology in any attempt to classify them. Four aetiological factors appear to be concerned severally or together in these diseases: a very low tocopherol intake, a high intake of polyunsaturated fatty acids, unaccustomed muscular exertion after close confinement, and a ration during pregnancy of certain legumes. These four factors do not, however exhaust the number of known aetiological agents

in the production of myopathy. Unlike human muscular dystrophies, there is little evidence to suggest they are of hereditary origin. Where sufficient information is available the diseases all appear to be of complex nutritional and managemental origin.

KEITH, T. B. & SCHNEIDER, A. P. (1957). **Muscular dystrophy in calves and lambs. I. The relation of environmental conditions to incidence.** — *J. Amer. vet. med. Ass.* **131,** 519-522. [Authors' summary modified.] **1535**

Muscular dystrophy (white muscle disease) appeared in calves and lambs from dams fed and wintered within specific areas of the Rocky Mountains. The dams had been fed roughages without concentrates. The incidence of the disease was high in calves whose dams had received 79·8 to 154 g. of tocopherol per 100 g. of hay. This would indicate that factors other than a tocopherol deficiency are responsible for the condition in calves.

WERTMAN, K. F., LYNN, R. J. & DISQUE, D. T. (1957). **The effects of vitamin deficiency on some physiological factors of importance in resistance to infection. IV. Riboflavin deficiency.**—*J. Nutr.* **63,** 311-319. **1536**

The results of this investigation indicated no alteration of the peripheral erythrocyte count due to either inanition or vitamin deficiency. Riboflavin deficiency and inanition reduced the total leucocytes in the peripheral blood from a normal value of 18,000 to 6,000/cu.mm. The pooled sera of the riboflavin-deficient animals and the inanition controls possessed the same degree of reduction in complement activity. The total leucocyte counts of the inflammatory exudates removed from the inanition and riboflavin deficient animals were smaller than those of the *ad libitum* controls. The fact that both riboflavin deficiency and inanition produced approximately the same response suggests that the decrease in total leucocytes might be due to the reduced nutritional intake rather than the specific riboflavin deficiency.—R.M.

MONIE, I. W., NELSON, M. M. & EVANS, H. M. (1957). **Abnormalities of the urinary system of rat embryos resulting from transitory deficiency of pteroylglutamic acid during gestation.**—*Anat. Rec.* **127,** 711-724. [Authors' summary modified.] **1537**

In rats deficient in pteroylglutamic acid from the 10th to 13th days of gestation two-thirds of their embryos had macroscopic abnormalities at 21 days, *e.g.* renal hypoplasia, renal ectopia, apparent absence of one kidney, hydronephrosis and hydro-ureter. Histological study of the early stages revealed many additional examples of renal and ureteric ectopia, closure of the mouths of the ureters, and urethral stenosis. The first evidence of abnormality was noted in 13-day-old embryos, in which the kidneys still lay caudal to the umbilical arteries as in 12-day-old controls. All the abnormalities could be explained by retarded development of the urinary tract and vertebral column. Comparison of these abnormalities with those due to deficiency from the 11th to 21st days of pregnancy showed that the types of anomalies varied with the time and with the length of deficiency. In general the abnormalities due to transitory deficiency appeared similar to those reported for maternal vitamin A-deficiency [see *V.B.* **19,** 2498 & **23,** 2643].

THORN, G. W., RENOLD, A. E. & WINEGRAD, A. I. (1957). **Some effects of adrenal cortical steroids on intermediary metabolism.**—*Brit. med. J.* November 2nd, 1009-1017. [Authors' conclusion modified.] **1538**

The adrenal cortex influences to a major degree the metabolism of carbohydrate, protein, and fat by the mammalian organism. These effects are mediated by adrenal cortical steroids which have, in common with other biologically active steroids secreted by the adrenal cortex, a 21-carbon chain, the unsaturation in ring A, and oxygen substitutions in position 3, 20, and 21. In addition, the most specific structural requirements relating to intermediary metabolic activity of naturally occurring corticoids appear to be the oxygen substitutions in positions 11 and 17. The main carrier of this activity in man is hydrocortisone (cortisol).

The effects of adrenal cortical steroids on intermediary metabolism have been studied in isolated tissues, in intact experimental animals, and in man. In man these studies have included observations made after the administration of exogenous steroids as well as the analysis of the syndrome resulting from excess or absence of endogenous glucocorticoids—*i.e.*, Cushing's syndrome and Addison's disease. Increased hepatic gluconeogenesis is the most readily demonstrated metabolic effect of these steroids. The time lapse between the administration of the hormones and increase in gluconeogenesis is approx. 1–3 hours, and is the same in the intact human organism and in tissues isolated from treated animals. In experimental animals, corticosteroids also inhibit the synthesis of long-chain fatty acids by liver and, to a less degree, by adipose tissue. In addition a direct effect upon the catabolism of body protein can be demonstrated in the liver-less organism. The occurrence of marked protein

depletion in patients with Cushing's syndrome at a time when glucose tolerance is still normal or affected only to a minor degree suggests that the latter effect is independent of the effect on hepatic gluconeogenesis and that it may be closer to the primary site of corticosteroid action.

Although our understanding of the effects of adrenal-cortical steroids on intermediary metabolism has been improved we are as yet unable to assign discrete metabolic sites to any of these effects, let alone suggest a primary site of corticosteroid action which could account for all their known metabolic effects.

HASKELL, A. R. & ADJARIAN, R. (1957). **Studies on the mechanism of iodide activity.**—*Vet. Med.* **52,** 601-605. [Authors' summary modified.] **1539**

Using a granuloma pouch technique in rats as the standard test method, it was demonstrated that: (1) the iodide ion possesses anti-inflammatory properties; (2) these anti-inflammatory properties are not dependent upon the adrenal; (3) within limits, the responses to iodides are proportional to the dose; and (4) cuprous iodide, in equivalent doses of iodide ion, has a greater activity than potassium iodide. In addition, it was suggested that cuprous iodide is active over a greater dosage range than is potassium iodide.

HILL, K. J. & TAYLOR, R. B. (1957). **Collection of pancreatic juice from the conscious sheep.** —*J. Physiol.* **139,** No. 2. pp. 26P-27P. of Proceedings. **1540**

Pancreatic juice was collected through a plastic catheter inserted into the common bile duct, after diverting bile through a plastic tube connecting gall-bladder to jejunum.—R.M.

ENNIO, B. (1957). Aggiornamenti terapeutici nelle paresi ante- e post-puerperali. **[Treatment of puerperal paresis.]** — *Clin. vet., Milano* **80,** 300-304. **1541**

Satisfactory results were obtained with corticotrophin, combined with small doses of adrenaline, in the treatment of 10 cases of milk fever.—T.E.G.R.

BAKKER, N. & WHITE, R. R. (1957). **A simplified micro-method for the colorimetric determination of total acetone bodies in blood.**—*N.Z. J. Sci. Tech. Sect. B.* **38,** 1001-1008. [Authors' summary modified.] **1542**

A method for determining the total acetone bodies in 1 ml. of blood is described. A large number of samples at a time can be handled. Acetoacetic acid and β-hydroxybutyric acid are converted to acetone by heating in the autoclave, first with acid alone and secondly with acid dichromate. The formed acetone is coupled with salicylaldehyde in alkaline solution, the colour being read without solvent extraction. Recovery of acetone and acetoacetic acid is complete, and of β-hydroxybutyric acid is 93%.

DISEASES, GENERAL

JOVANOVIĆ, V. P. (1957). Mesečno slepilo konja u vezi delovanja spoljašnjih faktora. **[Environmental factors in equine periodic ophthalmia.]**—*Vet. Glasn.* **11,** 514-521. [In Croat. English summary.] **1543**

Incidence of periodic ophthalmia was low at high altitudes and in places distant from rivers. From January onwards the number of cases increased, reaching its peak in April, after which incidence decreased again, reaching its lowest point in December.—E.G.

DIMIĆ, J. M. (1957). Periodična oftalmija u konja sa kliničkog i pravnog gledišta. **[Clinical and legal aspects of equine periodic ophthalmia.]**—*Vet. Glasn.* **11,** 504-514. [In Croat. English summary.] **1544**

Sight was preserved for more than a year in horses with periodic ophthalmia by inj. of 30,000–50,000 units of "omnacillin" or "omnamycin" into the anterior eye chamber or of 1,950,000–1,970,000 units parenterally. In acute cases the antibiotics were absorbed very quickly; in chronic cases resorption took several hours. It was stated that although about 80% of affected horses yield positive titres against *Leptospira*, the leptospiral aetiology is still doubtful, since it appears difficult to estimate positive titres and instances of successful experimental production of the disease with *Leptospira* appear to be rare. Legal aspects regarding sale under warranty of affected horses were discussed.—E.G.

RYFF, J. F. (1957). **Brisket disease syndrome.** — *J. Amer. vet. med. Ass.* **131,** 425-430. [Author's summary modified.] **1545**

The gross and microscopic changes in some 50 cows with brisket disease syndrome are described. It is suggested that a variety of conditions, *e.g.* anaemia from anaplasmosis, arteriosclerosis, and damage to the major organs and heart may operate in conjunction with the stress of altitude in producing this syndrome.

ČERNÁ, J. (1957). Mnohotné ložiskové nekrosy ve svalovině skotu. **[Multiple focal necrosis in ox muscle.]**—*Vet. Čas.* **6,** 339-347. [In

Czech. English, French, German and Russian summaries] **1546**

The author described in some detail, macroscopically and histologically, focal nodular lesions of uncertain aetiology affecting mainly the superficial muscles of the posterior region and the tail in cattle. Use of the term multiple nodular necrosis of the muscles was advocated instead of Roeckl's granuloma, blastomycosis, pseudotuberculosis and other terms in use for this condition.—E.G.

STOCK, C. (1957). Zur Bestimmung der Aktivität der Nebennierenrinde bei Rindern. **[Determination of adrenal cortex activity in cattle.]**—*Inaug. Diss., Munich* pp. 60. **1547**

The excretion of 17-ketosteroids in the urine of 5 bulls, 4 cows and 5 calves was determined by the Zimmermann reaction. The results were compared with determinations of "purified" and "unpurified" 17-ketosteroids using the method described by Girard & Sandulesco [*Helm. chim. Acta* **19,** 1095(1936)]. The amounts of "purified" ketosteroids excreted daily were 70 mg. in bulls and cows, and 0·6 mg. in calves aged 5 weeks.—R.M.

STEVENS, A. J. (1957). **Respiratory diseases of sheep.** — *Vet. Rec.* **69,** No. 49. Pt. 2. pp. 1249-1254. Discussion: pp. 1254-1257. [Author's summary copied *verbatim.*] **1548**

There are three specific types of pneumonia in sheep known in Great Britain. Parasitic broncho-pneumonia though widespread is not often clinically serious. Enzootic pneumonia is the form most frequently encountered and is constantly associated with *Pasteurella haemolytica.* The role of this organism is discussed. Jaagsiekte occurs in England and six outbreaks are recorded all of which have followed the purchase of replacement sheep in Scotland. Infected flocks have suffered serious losses and the disease is a potential danger. Control measures and future experiments for each type of pneumonia are discussed.

I. VALLENAS P., A. (1957). Algunas constantes fisiológicas en alpacas. **[Some physiological constants in alpacas.]**—*Rev. Fac. Med. vet., Lima* **7-11,** 157-171. [English summary modified.] **1549**

II. VALLENAS P., A. (1957). La glucemia en la alpaca. **[Blood glucose in alpacas.]** — *Rev. Fac. Med. vet., Lima* **7-11,** 142-156. [English summary modified.] **1550**

I. Normal adult alpacas have a rectal temperature of 38·6°C., with a range from 37° to 39·5°C.; a pulse rate of 79·8 per min., with a range from 44 to 110; and a respiratory frequency of 28·3 per min., with a range from 15 to 48.

II. The normal blood glucose value in the adult alpaca is 84·7 mg. per 100 ml. of whole blood, with a range of variation between 61 and 110. This value is higher than those found in the other domestic ruminants. The physiological basis for this high value is unknown. The alpaca is born with a very high blood glucose value (180·7 mg. per 100 ml.), which gradually decreases, reaching the normal level at the 7th or 8th week of age. The possibility that the normal hyperglycaemia in the young alpaca is the result of metabolic changes related to bacterial fermentation of carbohydrates in the rumen is discussed.

HAARANEN, S. (1957). Sikojen sydänkuolemasta. **[Observations on fatal syncope in pigs.]**—*Finsk VetTidskr.* **63,** 543-565. [In Finnish.] **1551**

Fatal syncope (plötzlicher Herztod) is common in some parts of Finland. A typical finding is an enlarged thyroid gland, up to 100 g. in a pig weighing 200 kg. The blood potassium content is increased; the pH of the muscles decreased to 5·2, and that of the myocardium to 4·5. Deficiency of proteins is typical in the feeds used, and soya bean meal or fish meal must then be added. Keeping the pigs in a pen without food for 1–2 days, which exhausts the carbohydrates of the muscles, is also recommended.

—H. WESTERMARCK.

FLOWERS, A. I., GRUMBLES, L. C., DUBOSE, R. T. & DELAPLANE, J. P. (1957). **Cataracts: a new flock problem in chickens.**—*Poult. Sci.* **36,** 1117. **1552**

The incidence of cataract of unknown aetiology in chickens appears to be increasing. It has been observed in 18 flocks, mostly in birds 6–10 weeks old. Morbidity is about 5%. Gross lesions are opacity of the lens, with liquefaction in more advanced cases.—M.G.G.

WILD, A. & ALM, H. (1957). Über die Behandlung von Erfrierungen beim Geflügel mit Mikrowellen. **[Treatment of frost-bite in poultry with microwaves.]**—*Berl. Münch. tierärztl. Wschr.* **70,** 149-152. [English summary.] **1553**

A high-frequency heating current was induced in the frost-bitten comb and wattles of fowls by means of microwave radiation applied to each side of the head for 5 min. The treatment was repeated 24 hours later. Results were

much better than with conventional methods of treatment—massage and application of ointments.—M.G.G.

ALETINA, M. B. (1957). **[Determination of the circulation time of blood in the horse with the aid of cytisine.]**—*Sborn. nauch. Trud. Leningr. Inst. Usovershenst. vet. Vrach.* **11,** 214-216. [In Russian.] **1554**

Cytoton (a 0·15% soln. of cystisine) was inj. into the jugular vein at a dosage of 1 ml./100 kg. body wt. Circulation time, calculated from the interval between injection and reaction, averaged 15 sec. with a range of 10–25 sec. The values obtained were higher than those obtained by using lobeline. Cytoton was safer than lobeline for horses.—R.M.

KUPFERSCHMIED, H. (1957). Untersuchungen über den Hämoglobin- und Erythrozytengehalt des Rinderblutes. **[Haemoglobin and erythrocyte content of the blood of cattle, with special reference to age.]**—*Zbl. VetMed.* **4,** 983-1004. [English, French and Spanish summaries. English summary modified.] **1555**

On the basis of 235 determinations the r.b.c. and Hb content of the blood of healthy cattle in relation to age is considered. The high r.b.c. counts present at birth fall until the animals are 2 years old, when they reach the value normal in the adult. The Hb level also falls after birth and there develops in fattening calves a severe hypochromic anaemia and a more mild anaemia in calves reared for breeding. The Hb level does not reach the normal value for adults for about 3 years. It is suggested that the iron present in the food of young animals, although in adequate amount, is not well absorbed and therefore is insufficient to satisfy the greater demands of the growing animal.

The r.b.c. and Hb values of sexually mature male animals are significantly higher than in females of the same age. In contrast, pregnancy seems to have no influence.

HENDERSON, W., PRITCHARD, W. R. & TAYLOR, D. B. (1957). **Observations on aplastic anemia in chickens.**—*Poult. Sci.* **36,** 1125. **1556**

Food obtained from poultry farms where aplastic anaemia occurred produced the disease in lab. chicks, but did not depress haematopoiesis in calves. No particular constituent of the diets, which were free from drugs, was found responsible. Possible causes of the disease are primary toxic agents, secondary factors, and alimentary deficiencies.—M.G.G.

SIKOV, M. R. & NOONAN, T. R. (1957). **The effects of irradiation with phosphorus-32 on the viability and growth of rat embryos.**—*Radiation Res.* **7,** 541-550. [Authors' summary modified.] **1557**

The effect of β-radiation on rat embryos of 6–10 days of gestational age was studied by intraperitoneal administration of radioactive phosphorus (P^{32}) to pregnant females. Values for the LD_{50} were found in terms of the doses of P^{32} which, when administered to the mother, would be expected to kill 50% of the foetuses by the 14th day of gestation. These values, which were found to be dependent on the day of gestation on which injection was made, were: 6th day, 0·46 mc; 8th day 0·57 mc; 9th day, 0·77 mc; and 10th day, 1·29 mc.

The uptake of the radiophosphorus was also studied at several doses. From these data, the radiation doses to the embryo were calculated for each day of gestation. It was also possible to estimate the radiation dose received by an embryo at the LD_{50} level. For the first 4 days after injection these were: 6th day, 300 rep; 8th day, 450 rep; 9th day, 560 rep; and 10th day, 925 rep. Uptake was proportional to the injected dose, indicating no major interference with phosphorus metabolism. All doses of P^{32} produced a depression of the weight of the embryos as measured on the 14th day of gestation. The magnitude of the depression followed the same pattern as did the LD_{50}, earlier embryos being more sensitive.

ZHURAVLEV, E. N. (1957). **[Oxyhaemometric studies in experimental and spontaneous pneumonia.]**—*Sborn. nauch. Trud. Leningr. Inst. Usovershenst. vet. Vrach.* **11,** 207-213. [In Russian.] **1558**

The oxygen content of arterial blood was determined by photometric observations on the ear flap, the results being comparable with those obtained by the Van Slyke method. Calibration curves for the new method for pigs, sheep and dogs with unpigmented skin were obtained. The oxygen saturation of the blood of pigs decreased during sleep.

Pneumonia was set up in piglets, dogs and cats by the i/m injection of various crystal violet vaccines into the neck, in the neighbourhood of the vagus nerve [see also *V.B.* **27,** 2693; and Farber (1937)—*J. exp. Med.* **66,** 397]. This caused catarrhal bronchopneumonia within 1–4 days. With the development of pneumonia, the oxygen saturation of the blood fell by 60–70%.

—R.M.

POISONS AND POISONING

SUTTIE, J. W., MILLER, R. F. & PHILLIPS, P. H. (1957). **Studies of the effects of dietary NaF on dairy cows. I. The physiological effects and the developmental symptoms of fluorosis.**—*J. Nutr.* **63,** 211-224. [Authors' summary modified.] **1559**

The effects of dietary increments of sodium fluoride on young adequately nurtured dairy cows for a period of 5½ years and through 5 lactations were studied. There was no direct relationship between over-grown hooves or diarrhoea in stall-fed dairy cows and the ingestion of as much as 50 p.p.m. of fluorine in the ration. Neither was there any interference with conception, gestation and parturition. There was a measurable fluorine transfer across the placental membranes and secretion of minute quantities of fluorine in the milk of fluoride-fed cows.

The earliest observable measures of increased fluorine ingested by cows were the effects upon the teeth and elevated concentrations of fluorine present in urine and rib-bone. In the control cows urine contained under 5 p.p.m. and rib-bone under 600 p.p.m. of fluorine.

After the early evidence of increased fluorine ingestion, no other untoward effects except a steady rise in bone fluorine concentration were observed until after a considerable time had elapsed. Depending upon intake and the time interval, the latent period was followed by refusal of fluorine-supplemented feeds, excessive loss in body weight and stiffness in the legs. These effects debilitated the animal within several weeks at sustained high intake levels. These symptoms were observed in 2 out of 3 animals fed 50 p.p.m. of fluorine during the third year on experiment. They were also observed in 2 out of 3 animals fed 50 p.p.m. fluorine with extra calcium, and began in 2 out of 4 animals fed 40 p.p.m. during the 5th year. The addition of calcium into the ration increased tolerance to fluorine. Other changes observed were fluorine concentrations in excess of 6,000 p.p.m. in rib biopsy and more than 30 p.p.m. in urine. Concurrently, there were severe dental changes. From these results it would appear that lactating dairy cows tolerate 30 p.p.m. of fluorine fed as NaF with comparative safety, that 40 p.p.m. is near marginal tolerance level, and 50 p.p.m. causes the development of fluorosis within 3 to 5½ years.

WHITEHEAD, T. P. (1957). **Arsenic and potatoes.** —*Lancet* Nov. 9th, 953. **1560**

Spraying potato fields with arsenite in order to kill the foliage before harvesting is a serious danger both to human beings and animals. The spraying is not supervised and potato-pickers and the public are often not warned of the danger of entering recently treated fields. Three operators of spraying equipment were found to excrete excessive quantities of arsenic in the urine, and another had vomiting and diarrhoea. Seven cattle died from arsenical poisoning after wandering into a field sprayed with arsenite.

—M.G.G.

NEUMAN, V. (1956). Otravy krmnou solí a jejich chemicko- toxikologické vyšetření. **[Chemical and toxicological research on sodium chloride poisoning in livestock.]**—*Sborn. vys. Šk. zemědělsk. les. Fak., Brno, Ser. B.* **4, (25),** 135-145. [In Czech. English, French and Russian summaries.] **1561**

N. studied the chlorine conc. in the liver of fowls and pigs fed large doses of NaCl. Normal chlorine-ion values in fowl liver were 205–284 mg.% and in pig liver 187–231 mg.%. Large, but not toxic doses of NaCl did not affect these values greatly, but in poisoned fowls chlorine-ion conc. was 334–524 mg.% and in pigs 351–459 mg.%. The value of these findings as a diagnostic aid in NaCl poisoning of livestock was discussed.—E.G.

WESTERMARCK, H. (1957). Lyijymyrkytysten hoito kalsiumi-EDTA eli kalsiumiverzenaatilla ja BAL eli dimerkaptopropanolilla. **[Calcium-EDTA and BAL (dimercaprol) in the treatment of lead poisoning.]**—*Finsk VetTidskr.* **63,** 417-422. [In Finnish.] **1562**

Lead poisoning in cattle has occurred when the drinking water contained 0·15 p.p.m. lead; in the blood 0·128 mg./1000 ml. is found in cases of lead poisoning. Lead oxide is the main cause of this poisoning in Finland. British anti-lewisite has been given, 4–6 mg./kg.; but sodium calcium edetate is preferred, in doses of 1–2 g. per 100 kg., repeated 2–3 times with 2–3 day intervals. The i/v injection must be given slowly, otherwise shock occurs. Sheep were killed with 0·4–0·05 g./kg. of sodium edetate.

HOFLUND, S. (1957). Förgiftningar med inom jordbruket använda kemiska bekämpningsmedel. **[Poisoning with toxic chemicals used on the farm.]**—*Finsk VetTidskr.* **63,** p. 476-492 & 497-498. [In Swedish.] **1563**

In lindane poisoning in a calf, 30 p.p.m. was found in the brain. In horses that had died from parathion poisoning the choline esterase content of the blood had decreased by 70%. Arsenic compounds used as wood preservatives

killed cattle in doses of 15–20 g., and sheep in doses of 0·5–10 g. Tar derivatives, *e.g.* "Corpit", used in cattle byres, provoke skin lesions similar to those of "X disease" which can be prevented by administration of vitamin A.

—H. WESTERMARCK.

TEUSCHER, R. (1956). Ein seltener klinischer Fall von zweimaliger Vergiftung eines Rinderbestandes durch chlorierte Naphthaline. **[Poisoning in a herd by binder twine impregnated with chlorinated naphthalenes.]**—*Mh. VetMed.* **11,** Suppl. No. 2. pp. 675-677. **1564**

A mysterious condition, characterized by cachexia, lachrymation, anorexia, diarrhoea, gingivitis, agalactia and abortion, and diagnosed at the time as "malignant bovine gastro-enteritis", caused a herd of 20 cattle to be emergency-slaughtered. A new herd, introduced into the same stable 8 months later soon developed similar symptoms. Both herds had been fed baled straw bound with a twine impregnated with highly chlorinated hydrocarbons. Withdrawal of the straw and prompt substitution of hay and mineral and vitamin supplements arrested the condition in this instance.—G. P. MARSHALL.

I. POST, J., HIMES, M. B., KLEIN, A. & HOFFMAN, J. (1957). **Responses of the liver to injury. Effects of growth hormone upon acute carbon tetrachloride poisoning.**—*Arch. Path.* **64,** 278-283. **1565**

II. POST, J., HIMES, M. B., KLEIN, A. & HOFFMAN, J. (1957). **Responses of the liver to injury. Effects of previous injuries and age upon the healing pattern after acute carbon tetrachloride poisoning.**—*Ibid.* 284-289. [Authors' summaries modified.] **1566**

I. The administration of growth hormone before and after acute CCl_4 hepatic injury markedly exaggerated the inflammatory-cell infiltration and regenerative response (mitosis, nuclear polyploidy, and tissue nucleic acid synthesis) in the rat liver. The degree of hepatic necrosis was less in the hormone-treated animals. Cytoarchitectural restoration was neither delayed nor hastened by growth hormone. Some of the effects of growth hormone were the opposite of those of cortisone, previously reported [see *V.B.* **25,** 4147].

II. Successive injuries to the liver, separated by intervals of healing, are associated with an increasing deficit in its restorative capacity. Age is a major determinant in the healing pattern after acute hepatic injury: in 6-month-old rats healing was slower than in 2-month-old rats. The change in nuclear-class distribution of the liver cells, which is observed with advancing age or after injury, is associated with altered healing patterns after acute hepatic injury.

BEGOVIĆ, S., JANJATOVIĆ, M., KOZIĆ, L. & NEŠIĆ, P. (1957). Eksperimentalni prilog poznavanju patogeneze alimentarnih intoksikacija goveda hrastovim listom. **[Experimental oak leaf poisoning in cattle.]**—*Vet. Glasn.* **11,** 761-767. [In Croat.] **1567**

Clin. symptoms of oak leaf poisoning, including severe anaemia, tenesmus, loss of appetite, frequent micturition, constipation etc., were produced in rats, dogs and calves by oral administration of a decoction of oak leaves or a 5–10% soln. of tannic acid.—E.G.

HARRIS, P. N., HENDERSON, F. G. & CHEN, K. K. (1957). **Hepatic cirrhosis induced in sheep by** *Senecio longilobus*.—*Arch. Path.* **64,** 297-302. [Authors' summary modified.] **1568**

Administration of *S. longilobus* to sheep resulted in hepatic injury culminating in cirrhosis. Slight hypothrombinaemia developed, and the plasma became icteric before the animals were moribund.

CHEN, K. K., ANDERSON, R. C., MCCOWEN, M. C. & HARRIS, P. N. (1957). **Pharmacologic action of hypoglycin A and B.** — *J. Pharmacol.* **121,** 272-285. **1569**

Hypoglycin A and B are peptides isolated from the seeds and fruit of the ackee tree of Jamaica (*Blighia sapida*). When injected i/v they caused hypoglycaemia in rabbits, monkeys, rats and mice, but not in cats, dogs or pigeons. Some animals given lethal doses developed fatty degeneration in the liver. The symptoms and lesions agreed with those occurring in ackee poisoning.—R.M.

COLLENOT, A. (1956). Contribution à l'étude des intoxications par les légumineuses en Afrique occidentale française. **[Toxicology of leguminous plants in French West Africa.]** —*Thesis, Paris* (*Alfort.*) pp. 66. **1570**

C. discussed the literature. He isolated a haemolytic substance from *Bussea occidentalis* which was probably a saponoside.—R.M.

DYSSEGAARD, A. (1957). **Scilliroside intoxication in the rat.**—*Nord. VetMed.* **9,** 99-118. [In English. German and Danish summaries.] **1571**

Death in scilliroside intoxication results from a combination of the effect of the drug on the

heart and its action on the motor, respiratory and thermotaxic centres; it is not caused by any one of these actions alone.—R.M.

ROBBINS, W. E., HOPKINS, T. L. & EDDY, G. W. (1957). **Metabolism and excretion of phosphorus-32-labeled diazinon in a cow.**—*J. agric. Fd Chem.* **5**, 509-513. [Authors' summary modified.] **1572**

Phosphorus-32-labelled diazinon, administered orally to a cow at 20 mg. per kg., is rapidly metabolized and excreted. Only low levels of unchanged toxicant were found in blood and milk samples. About 74% of the dose, excreted as polar degradation products, was accounted for in the urine 36 hours after treatment.

BURNS, E. C., DAHM, P. A. & LINDQUIST, D. A. (1957). **Secretion of DDT metabolites in the bile of rats.**—*J. Pharmacol.* **121**, 55-62. [Authors' summary modified.] **1573**

The bile was an important pathway for the elimination of metabolites of D.D.T.: as much as 20% of subacute, oral doses of D.D.T. in maize oil were recovered from the cannulated bile duct a few hours after administration. Most of the D.D.T. metabolites were voided in the faeces; very little was eliminated in the urine.

MOUNTNEY, G. J. & QUISENBERRY, J. H. (1957). **Contamination of broilers with chlordane and pyrethrum.**—*Poult. Sci.* **36**, 923-924. **1574**

Under both field and laboratory conditions, the meat of fowls exposed shortly before slaughter to an aerosol of 2% chlordane soln. and pyrethrum had an unpleasant taste.

—M.G.G.

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

I. IOPA, I. S., DAN'KOV, I. A. & MANNOV, G. M. (1957). **[Use of the tissue preparations described by V .P. Filatov as growth stimulants in animals.]**—*Veterinariya, Moscow* **34**, No. 10. pp. 25-29. [In Russian.] **1575**

II. ANON. (1957). **[From the U.S.S.R. Ministry of Agriculture: Use of tissue preparations for stimulating the growth of young animals and for increasing the weight of fattened animals.]** —*Ibid.* pp. 89-91. [In Russian.] **1576**

I. Tissue suspensions were prepared from parenchymatous organs of healthy animals by the following method. After slaughter the organs were kept at 0° to 4°C. They were minced and normal saline was added (1 part tissue to 2 parts saline). The mixture was boiled for 1–1½ hours, allowed to cool, and filtered. The filtrate was bottled and autoclaved at 120°C.: it kept for 4 months. The preparation was administered by s/c inj. in doses of 3–5 ml. for pigs, 5–10 ml. for young cattle and 15–20 ml. for adult cattle. A course of treatment consisted of 3–4 weekly injections every second month; with pigs it commenced at 3 weeks of age. It was claimed that the slaughter weight of treated pigs and bullocks was between 27 and 34% higher than that of untreated controls. The treatment was also considered to be beneficial for sick pigs and ducks. In the same issue of *Veterinariya* there are 3 papers which give more detailed results of this trial for individual districts.

II. A conference at the veterinary department of the U.S.S.R. Ministry of Agriculture, held on 27th July 1957, recommended the organization of large-scale trials of tissue therapy for stimulation of growth of animals, following the successful trials in the Ryazan oblast, (described above).—R.M.

BICKOFF, E. M., BOOTH, A. N., LYMAN, R. L., LIVINGSTON, A. L., THOMPSON, C. R. & DEEDS, F. (1957). **Coumestrol, a new estrogen isolated from forage crops.**—*Science* **126**, 969-970. **1577**

The authors isolated a crystalline compound possessing oestrogenic activity from ladino clover (*Trifolium repens*), strawberry clover (*T. fragiferum*) and lucerne. The compound was the predominant oestrogen in these plants and it appeared to be a coumarin derivative rather than an isoflavone. The name coumestrol was proposed. Oestrogenic activity was measured by feeding the compound to immature female mice and by noting the effect on weight of the uterus.

—R.M.

REHDER, K. & SCHMIDT, L. (1957). Pharmakologische Wirkungen einiger organischer Lösungsmittel. **[Pharmacological action of some organic solvents.]**—*Arzneimittelforsch* **7**, 703-705. [English summary.] **1578**

The action of the drug solvents 1,2-propandiol, "polyglycol 200", "polyglycol 400", "Cremophor El", and "colamin" was tested on isolated intestine, heart and uterus, on blood pressure of cats and coronary blood flow in dogs. None was pharmacologically inert. The results of tests were tabulated.—R.M.

ANON. (1957). **New combinations of antibiotics.**—*Lancet* December 14th, 1207-1208. **1579**

A review article on erythromycin, oleandomycin and spiramycin—alone and in combination with tetracycline. The activity of the individual antibiotics against staphylococci and other Gram-positive organisms is in the order mentioned. Of the combinations with tetracycline none is superior to the more active component alone. Care and discrimination are advocated in the use of these antibiotics in view of the danger of producing a resistant staphylococcal population.—T.E.G.R.

DALGAARD-MIKKELSEN, S. & RASMUSSEN, F. (1957). Røbefarve i antibiotikaholdige intramammaria. **[Tracer dye in antibiotic-containing intramammary injections.]** —*Nord. VetMed.* **9,** 852-854. [In Danish. English and German summaries. English summary modified.] **1580**

When the dye Green S. (Rowe's colour index No. 737) is added to suspensions of penicillin for intramammary injection, in a quantity of 25–75 mg. per 100,000 i.u. penicillin, the milk of treated cows is coloured for several days after treatment, the intensity varying directly with the concentration of penicillin in the milk.

PRICE, K. E., ZOLLI, Z., JR., ATKINSON, J. C. & LUTHER, H. G. (1957). **Antibiotic inhibitors. I. The effect of certain milk constituents. II. Studies on the inhibitory action of selected divalent cations for oxytetracycline.**—*Antibiot. & Chemother.* **7,** 672-688 & 689-701. [Spanish summaries pp. 712 & 713. Absts. from authors' summaries.] **1581**

I. The antagonistic influence of milk on oxytetracycline, chlortetracycline, and polymyxin B can be attributed to the high concentration of inorganic ions, principally Ca and Mg. The readily ionizable salts of Ca and Mg were more inhibitory than the poorly ionizable. Although inorganic ions were also highly inhibitory for dihydrostreptomycin and neomycin, the antagonism of milk could only partly be attributed to the cation content, since casein also antagonized these antibiotics. The antagonism of milk was reversed by exposing the milk to cationic exchange resins, or by the addition of calcium binding or chelating agents. Mg salts were more antagonistic than Ca salts to oxytetracycline and chlortetracycline; conversely, Ca salts were more antagonistic than Mg salts to polymyxin B, dihydrostreptomycin, and neomycin. It is concluded that the inhibition of antibiotics by milk is important in testing the sensitivity of mastitis organisms and in the treatment of mastitis.

II. Oxytetracycline activity against *Pseudomonas aeruginosa* cells was inhibited by the addition of Ca or Mg, even when the cells had been exposed to the antibiotics for 20 hours. This inhibition was reversed by delayed addition of sodium citrate or potassium oxalate. It appears, therefore, that the site of antibiotic action is at the cell surface. There was a high uptake of oxytetracycline and also of calcium ions by washed *Ps. aeruginosa* cells, but when both substances were added the uptake of Ca was unaltered, whereas that of oxytetracycline was suppressed. This, together with the indication that most of the antibiotic uptake is by adsorption, supports the hypothesis that the preferential adsorption of cations inactivates oxytetracycline. An alternative hypothesis is that the antibiotic is inhibited by the formation of weak cation—antibiotic complexes which require an excess of cations for their preservation.

DAS, P. K. & ARORA, R. B. (1957). **General pharmacological properties of 21-hydroxypregnanedione sodium succinate, an intravenous anaesthetic agent.**—*J. Pharmacol.* **121,** 149-159. **1582**

This anaesthetic, also referred to as hydroxdione, when injected i/v at 60 mg./kg. did not depress the cardiovascular and respiratory systems of cats and dogs anaesthetized with morphine and urethane, as much as 15 mg./kg. thiopentone did under the same conditions. It had no significant effect on heart rate, heart rhythm or the electrocardiograph.—R.M.

See also absts. **1301** (penicillin susceptibility and virulence of Staph. aureus); **1303** (enzymes in mastitis); **1320** (isoniazid); **1321** (drug sensitivity tests for M. tuberculosis); **1340** (mycostatin in avian moniliasis); **1398** (susceptibility of P.P.L.O. to antibiotics); **1404-1407** (coccidiosis); **1409** (haemosporidial infections); **1411** (toxoplasmosis); **1431-1432** (swine fever); **1469-1473** (parasiticides); **1478, 1481, 1486-1487, 1489-1491 & 1495** (anthelmintics); **1565-1566** (carbon tetrachloride poisoning); **1572** (diazinon poisoning in a cow).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

KOSTER, R. (1957). **Comparative studies of emesis in pigeons and dogs.**—*J. Pharmacol.* **119,** 406-417. **1583**

K. studied the inhibition by orally administered cyclizine lactate of vomiting caused by the i/v inj. of apomorphine or piperazine hydrochloride and by oral administration of copper sulphate.—R.M.

JOINER, W. P. & HUSTON, T. M. (1957). **The influence of high environmental temperature on immature domestic fowl.**—*Poult. Sci.* **36,** 973-978. **1584**

At a constant temp. of 90°F. the growth of 200 New Hampshire chicks and 200 White Plymouth Rock chicks was depressed at 4 weeks of age, while there was no noticeable effect on 200 White Leghorns until 8 weeks. At 10 weeks their average weight was 0·4 lb. less than that of 600 controls, whose average daily range of environmental temp. was from 69° to 85°F. Controls drank less water and their thyroid glands were heavier. There was no difference in food conversion efficiency.—M.G.G.

ALEXANDER, D. P., NIXON, D. A., WIDDAS, W. F. & WOHLZOGEN, F. X. (1958). **Gestational variations in the composition of the foetal fluids and foetal urine in the sheep.**—*J. Physiol.* **140,** 1-13. [Authors' summary modified.] **1585**

The composition of the foetal fluids in the sheep was compared with that of the maternal and foetal plasma and urine during the latter half of pregnancy. Foetal urine is hypotonic, otherwise its composition has typical urinary characteristics. Its composition is closely related to that of allantoic fluid and it is the probable source of that fluid. Amniotic fluid has osmotic and other characteristics more closely related to those of foetal or maternal plasma, but there was evidence of an admixture with foetal urine in the latter part of pregnancy, confirming the observations of Jacqué (1902). The volume of urine produced and its distribution to the amniotic sac suggest that ingestion and absorption of fluid by the gastro-intestinal tract may play a part in regulating the volume of the fluids in older foetuses.

DE BERARDINIS, E. (1958). **Studies of the differences of osmotic pressure between the aqueous humor and the serum in some species of animals.**—*Experientia* **14,** 14-15. **1586**

Compared with the blood serum, aqueous humour was hypertonic in the horse, cow, dog, rabbit and man, but it was hypotonic in the pig and guinea-pig.—R.M.

PAZUR, J. H., BUDOVICH, T., SHUEY, E. W. & GEORGI, C. E. (1957). **Hydrolysis of xylan and xylooligosaccharides by ruminal enzymes.** —*Arch. Biochem.* **70,** 419-425. [Authors' summary modified.] **1587**

Xylan was hydrolysed to a mixture of xylo-oligosaccharides by enzymes in the rumen of a bull. Several bacterial cultures obtained from rumen contents produced xylan-hydrolysing enzymes.

GANDER, J. E., PETERSEN, W. E. & BOYER, P. D. (1957). **On the enzymic synthesis of lactose-1-PO_4.** — *Arch. Biochem.* **69,** 85-99. **1588**

Enzyme fractions obtained from bovine mammary tissue catalysed the synthesis of lactose 1-phosphate from uridine diphosphate glucose and glucose 1-phosphate.—R.M.

WOOD, H. G., SIU, P. & SCHAMBYE, P. (1957). **Lactose synthesis. III. Distribution of C^{14} in lactose of milk after intra-arterial injection of acetate-1-C^{14}.** — *Arch. Biochem.* **69,** 390-404. **1589**

Acetate labelled with radioactive carbon was injected into the left pudendal artery of a cow. The left and right sides of the udder were milked separately and the lactose was isolated from the milk samples. From the results the authors were able to suggest routes for the synthesis of lactose from acetate.—R.M.

MEITES, J. (1957). **Induction of lactation in rabbits with reserpine.**—*Proc. Soc. exp. Biol., N.Y.* **96,** 728-730. [Author's summary modified.] **1590**

Twenty mature female rabbits were injected s/c with 0·2 mg. oestradiol daily for 2 or 10 days; ten were then given a single i/v injection of 1 mg. reserpine/kg. body wt., the other ten serving as controls. Nine of the reserpine-treated rabbits came into lactation one week later while none of the controls produced milk. Four other rabbits were made pseudopregnant by a single i/v inj. of chorionic gonadotrophin, and 15 days later 2 were injected as above with reserpine and 2 served as controls. Only the 2 reserpine-treated animals came into lactation. Macroscopic and histological examination of the mammary glands of reserpine-treated rabbits previously injected with oestrogen revealed extensive lobule-alveolar development with secretion in the alveoli, whereas their controls showed an extension of the duct system with no alveolar growth. Reserpine probably induced an increased secretion and/or release of prolactin and possibly of other hormones favourable to mammary growth and lactation, but confirmation of this hypothesis awaits assay of pituitary hormones.

PEETERS, G., COUSSENS, R., DE LOOSE, R. & VAN DEN HENDE, A. (1957). L'incorporation de D.L. cystine 35S dans les protéines du lait par la glande mammaire. [**Incorporation of labelled cystine in milk proteins by the mammary gland.**]—*Arch. int. Pharmacodyn.* **109,** 415-424. [English summary.] **1591**

Cystine labelled with radioactive sulphur was incorporated in milk proteins in sheep and

in the perfused cow's udder. It was concluded that amino-acids in the blood plasma were more important than plasma proteins for the synthesis of milk proteins.—R.M.

AÏZENSHTADT, T. B. (1957). **[Haemopoiesis in the yolk sac of foetal Karakul lambs.]**—*C.R. Acad. Sci., U.R.S.S.* **116,** 337-340. [In Russian.] **1592**

Three stages in haemopoiesis in the yolk sac were distinguished; they were all extravascular. (1) Formation of large numbers of free blood cells from "blood islets" in the wall of the yolk sac, during the 16th and 17th days of development. (2) Rapid transformation of primary blood cells into haemocytoblasts and erythroblasts (megaloblasts) of the first generation, during the 17th to 24th day. (3) Between the 25th and 26th days, the formation of numerous "blood islets" in the entodermal epithelium and in the connective tissue layer of the yolk sac. At the end of this period, haematopoiesis ceased in the yolk sac and began in the liver.—R.M.

VAN DER HELM, H. J., VAN VLIET, G. & HUISMAN, T. H. J. (1957). **Investigations on two different haemoglobins of the sheep.** —*Arch. Biochem.* **72,** 331-339. **1593**

Two haemoglobins were identified in the blood of Dutch sheep of the Texel breed. The "abnormal" haemoglobin II in the sheep contained larger amounts of glutamic acid, threonine and serine, and smaller amounts of aspartic acid, glycine and alanine than normal haemoglobin. The genetic basis of the occurrence of the two haemoglobins appeared to be similar to that in human beings.—R.M

VISSER, H. K. A., HUISMAN, T. H. J. & WOLDRING, M. G. (1957). **The postnatal synthesis of fetal hemoglobin. I. Some studies in newborn goats using radioactive Fe^{59} and glycine-2-C^{14}.**—*Blood* **12,** 1004-1010. [Interlingua summary. Authors' summary modified.] **1594**

Postnatal synthesis of foetal and adult haemoglobin was studied with radioactive iron (F^{59}) and glycine-2-C^{14} in new-born kids. At birth about 60% of haemoglobin was foetal; after 60 days only about 5% was found. Two kids were given "exchange transfusions" with their dam's blood. Using an alkali denaturation method the foetal haemoglobin was not demonstrable during the first few days after this treatment, but 20 days later about 20% was present in circulating blood. Maxima of radioiron-specific activity in adult haemoglobin occurred in untreated new-born kids at the 12th day, and maxima of C^{14}-specific activity at the 6th day; in the transfused kids maxima for radioiron occurred at the 8th day. The foetal haemoglobin maxima of specific activity occurred in the untreated kids respectively after 32 and 24 days, and in the transfused kids after 8 days. The reappearance of foetal haemoglobin in kids after exchange transfusion and its specific activity are direct indications that this component is synthesized after birth in this species.

RINGER, R. K., WEISS, H. S. & STURKIE, P. D. (1957). **Heart rate of chickens as influenced by age and gonadal hormones.** — *Amer. J. Physiol.* **191,** 145-147. [Abst. from authors' summary.] **1595**

The average heart rate of fowls increased from 286 beats/min. at 1 day of age to 475 at 1 week. It continued to increase slowly to a maximum of approx. 500 beats at 3–4 weeks, then gradually declined to a stable adult rate of 280–350 at about 6 months. Between the 12th and 17th weeks the heart rate of the male dropped by 10–12% below that of the female. The role of gonadal hormones in this sex difference was not clear.

TIMDAL, J. S. (1957). **Blood flow in the isolated perfused bovine udder.** — *Amer. J. Physiol.* **191,** 287-292. **1596**

In 6 out of 24 experiments, the rate of blood flow exceeded 10 ml./100 g. tissue/min., and the highest value observed was 26·4 ml./100 g. per min.—R.M.

KNISELY, M. H., HARDING, F. & DEBACKER, H. (1957). **Hepatic sphincters. Brief summary of present-day knowledge.** — *Science* **125,** 1023-1026. **1597**

The authors discussed the functions of the liver and portal vein bed as a reservoir of blood, the mechanisms which control storage, the inlet and outlet sphincters of the liver lobule, the portacaval anastomoses, and the retention of blood in circulatory shock. A great deal is still unknown. There are some 50 references.

—M.G.G.

COMLINE, R. S. & TITCHEN, D. A. (1957). **Reflex contractions of the reticulum and rumen and parotid salivary secretion.**—*J. Physiol.* **139,** No. 2. pp. 24P-25P. of Proceedings. **1598**

In experiments with sheep and goats the most effective reflex stimulus to parotid salivary secretion and contractions of both the reticulum and rumen was stretch of the reticulo-ruminal fold and reticulum.—R.M.

ANDERSSON, B. & JEWELL, P. A. (1957). **Studies on the thalamic relay for taste in the goat.**—*J. Physiol.* **139,** 191-197. [Authors' summary copied *verbatim.*] **1599**

Stimulation of the posteromedial ventral thalamic nucleus in the unanaesthetized goat evokes licking, chewing and 'rejection' movements which suggest that the animal is experiencing an unpleasant taste. After bilateral ablation of this nucleus thirsty goats will readily drink previously distasteful solutions, and appear to have lost all sense of taste.

BELL, F. R. & LAWN, A. M. (1957). **Disturbance of rumination in the goat after ablation of the orbito-frontal lobes of the cerebral cortex.**—*Brit. J. Anim. Behav.* **5,** 125-130. [Authors' summary modified.] **1600**

Three goats ruminated within a few hours of the cortical ablation and spent as much time in ruminating in a day as normal animals. The length of the rumination cycle was irregular. The irregularity was synchronized with an irregularity of reticulo-ruminal contractions. There was variation in the jaw movements during re-mastication; this may have been due to the very fluid nature of the regurgitated food. The role of the cerebrum in rumination is discussed.

TALANTI, S. (1958). Neurosekretioteoria. **[The theory of neurosecretion.]**—*Finsk VetTidskr.* **64,** 8-11. [In Finnish. English summary.] **1601**

Using an enzyme staining technique it was possible to demonstrate an active secretion in the hypothalamus, this being in accord with the findings of Eränkö. Modern concepts of the theory of neurosecretion were discussed and an attempt was made to give a coherent picture of the phenomenon. The secretion is in close contact with that of the neurohypophysis, and is also found in the supraoptic nucleus and in the pars paraventricularis.—H. WESTERMARCK.

MYULLER, G. R. & RAGOZINA, M. N. (1957). **[Early developmental stages of the ovaries in fowls of the Russian White and Australorp breeds.]** — *C.R. Acad. Sci. U.R.S.S.* **115,** 1044-1047. [In Russian.] **1602**

Measurements of size and weight of the ovaries from the 8th day of incubation to hatching revealed that the gonads of chicks of the Australorp breed developed more rapidly than those of the Russian White breed.—R.M.

CHEREMNUIKH, L. P. (1957). **[Acid mucopolysaccharides in the chorion of animals having a primitive placentation.**—*C.R. Acad. Sci. U.R.S.S.* **116,** 312-314. [In Russian.] **1603**

Histochemical studies of the placenta of the ewe and the sow revealed the presence in connective tissue of much greater amounts of highly polymerized mucopolysaccharides than in the human placenta. As pregnancy advanced, the amount of these substances diminished, and depolymerized mucopolysaccharides increased. The decrease in the polymerized substances was apparently due to increased permeability of the connective tissue.—R.M.

SMOLLICH, A. (1957). Über das Wachstum der Nebenniere. **[Growth of the adrenal glands.]** — *Zbl. VetMed.* **4,** 1017-1026. [English, French and Spanish summaries. English summary slightly modified.] **1604**

In contrast to man, the adrenals of cattle, pig, dog and cat foetuses grow very little at all stages of development. At no stage do they become as large as the kidney. Contrary to the weight relations of the adrenals in the growing and adult animals the relationship between adrenal weight and kidney weight on the one hand and between adrenal weight and body weight on the other is relatively close, particularly in young foetuses and especially in the pig at the time of birth. A post-partum involution of the adrenal shown by a loss of weight, as occurs so clearly in man, was not observed in normal conditions in the species studied. More detailed studies were made on the weight changes of the adrenal of the ox. The differing relationships of the adrenals in man and domestic animals and their possible causes are briefly discussed.

WAITES, G. M. H. (1957). **The course of the efferent cardiac nerves of the sheep.**—*J. Physiol.* **139,** 417-433. [Author's summary modified.] **1605**

Efferent cardiac fibres in the sheep were traced by measuring responses of the heart to electrical stimulation of the cervical and thoracic vagosympathetic nerves. Cardio-inhibitory fibres descended in both cervical vagal trunks and only rarely were any found to join with the cervical sympathetic nerves. They passed to the heart from the upper part of the right thoracic vagus, and on the left from the recurrent laryngeal and the vagal trunk just below the origin of this nerve; the majority left the vagal trunks above the level of the terminal portions of the azygos veins. Cardio-accelerator fibres were consistently found in the right sympathetic outflow but were present in fewer numbers or were absent from the left. They entered the thoracic sympathetic

chain through the spinal roots T 1–T 6 on the right side, and T 2–T 5 on the left. On both sides they were found in the chain well below these points and there was evidence therefore that they turned back within the chain.

HILL, K. J. (1957). **Nervous structures in the reticulo-rumen epithelium of the goat.** — *J. Physiol.* **139,** No. 2. pp. 4P-5P. of Proceedings. [Author's abst. slightly modified.] **1606**

Frozen sections were prepared from the reticulo-rumen sac of kids (2–28 days old) which had been perfused with buffered methylene blue solution immediately after death. In several areas of the rumen a fine network of beaded fibres was present in the subepithelial connective tissue and from this network occasional fine fibres could be seen passing into the submucosa proper. Fibres also entered the stratified squamous epithelium of the rumen and in suitable sections these fibres could be traced into the outermost keratinized layers of the epithelium where they appeared to end as fine single filaments.

In the region of the posterior ruminal pillar and in the reticulo-ruminal fold the fibres entering the epithelium gave rise to what appeared to be more complicated endings. These consisted of discrete branched, coiled, fibres which were beaded and which eventually terminated as fine filaments in the keratinized layer of the epithelium. Investigations are in progress to ascertain whether similar structures occur elsewhere in the reticulo-rumen.

—. (1957). **A discussion on viability of mammalian cells and tissues after freezing. Under the leadership of A. S. Parkes, F. R. S.** — *Proc. roy. Soc. Ser. B.* **147,** 423-553. **1607**

The nine principal contributions to this discussion dealt with the physical and chemical changes resulting from freezing and with special problems resulting from the freezing of erythrocytes, spermatozoa, ovaries and whole mammals. C. Polge read a paper on the low-temperature storage of mammalian spermatozoa; A. Walton and L. E. A. Rowson discussed cold shock in spermatozoa.—R.M.

See also absts. **1549-1550** (physiological studies in alpacas).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

LINSERT, H. (1957). Fleischbeschauliche Beurteilung der Anthropozoonosen. **[Meat inspection with a view to animal diseases transmissible to man.]**—*Mh. VetMed.* **12,** 80-82. **1608**

L. discussed the difficulties of diagnosing diseases dangerous for man in slaughter animals, In cases of suspected listeriosis he recommended that the medulla oblongata be examined bacteriologically and histologically.—M.G.G.

IPATENKO, N. G. (1957). **[Veterinary services in Eastern China.]**—*Veterinariya, Moscow* **34,** No. 10. pp. 80-82. [In Russian.] **1609**

Eastern China was divided into 5 provinces, each having a veterinary department controlling 4–5 veterinary stations (each employing 1 veterinarian and 14–18 other staff) and a veterinary bacteriological lab. (one veterinarian and 4 other staff). In Shanghai there was a state veterinary hospital (4 veterinarians), a veterinary department at the epidemiological station of the Medical Research Institute for Eastern China (4 veterinarians), and a Central Pasteur Institute (1 veterinarian). In the area covered by the veterinary hospital there were 10,000 cattle, 500,000 pigs and 18,000 sheep; artificial insemination was performed by the hospital. The organization of meat inspection was described. The main diseases were anthrax, bovine contagious pleuropneumonia, rinderpest, swine erysipelas, swine fever and glanders.—R.M.

See also absts. **1334** (E. coli (infantile enteritis strain) in meat); **1341** (salmonellosis in slaughter animals); **1574** (chlordane and pyrethrum taste in poultry meat).

REPRODUCTION AND REPRODUCTIVE DISORDERS

MAHRLA, A. (1957). Über die Wirkung von Antibiotikazusätzen zum Sperma in der künstlichen Besamung beim Rind. **[Action of antibiotics added to bull semen for artificial insemination.]** — *Zuchthyg. Fortpfl-Störung. u. Besamung.* **1,** 157-163. **1610**

M. studied the effect of a proprietary mixture containing equal parts potassium penicillin, dihydrostreptomycin sulphate and polymyxin, on controlling the growth of *Ps. pyocyanea* under normal conditions of semen dilution. One ml. 1% triphenyltetrazolium chloride (which was used as a colour-indication of the presence of living organisms) was added to 4 ml. of a broth culture. The resulting colour reaction was estimated quantitatively. In later runs the culture sample was saturated with antibiotic and colour estimated after half, one, two, five and 24 hours;

absence of any colour was interpreted as complete bacteriostasis. This usually supervened after 2–5 hours at 5°C. A repeat using egg yolk-citrate diluted semen from a bull carrying this organism, showed complete stasis always after 5 hours, whereas in control semen steady growth occurred.—F. L. M. DAWSON.

SALISBURY, G. W. (1957). **Recent developments with bull semen diluents.**—*Anim. Breed. Abstr.* **25,** 111-123. **1611**

A perfect diluent should include, besides substrates, protective substances against cold shock and both aerobic and anaerobic toxic end-products; lecithin and lipoprotein in egg yolk are examples of such substances. Phosphate buffer is going out of use as compared with citrate on account of its poorer results in combination with antibiotic. Sulphanilamide (above freezing point), penicillin and streptomycin are all worth adding; they control early foetal death [effect probably mainly against *Vibrio fetus*], but none is 100% efficient against this organism, *Trichomonas,* or *Brucella abortus.* Five independent research teams have established that under American conditions 5–10 million spermatozoa is a minimum dose for optimum insemination results. Bicarbonate and glycine additions have proved disappointing; milk diluents were tried in Europe [no details] before their first application in America in 1951, and appear slightly but definitely superior. The development by VanDemark & Sharma [*V.B.* **27,** 3749] of a room temperature diluent is mentioned.

—F. L. M. DAWSON.

HORVÁTH, I. (1957). Wirkung von Hefeextrakten auf die Aktivität der Spermien. II. Befruchtungsversuche in vivo. [**Effect of yeast extracts on semen. II. Fertilization experiments** *in vivo.*]—*Acta vet. hung.* **7,** 147-156. [In German.] **1612**

The addition of yeast [details not supplied] was considered to have raised the fertilizing potential of "poor quality semen" from 6 bulls, to give a conception rate (C.R.) in 65 cows of 60% to first insemination. In split-sample trials with 5 other bulls on 73 cows receiving yeast-treated semen, and 87 untreated semen controls, the C.R. was 58·8% for the treated against 41·3% for control semen. At another centre, treatment appeared to affect little the C.R. of 3 highly fertile bulls used on 570 cows, but that of 3 other bulls used on 43 cows appeared to rise from 30 to 63%. A similar experiment at a third centre showed for 3 bulls a C.R. of 51% for treated and 36% for untreated semen—116 and 96 cows respectively were used. At this centre, two other, highly fertile, bulls were unaffected.

4–5% of yeast was added to stallion semen; after mixing this was held for 15 min. in a water-bath at 25°C. One stallion's conception rate appeared to be raised to 59% from 39 the previous year. Another stallion's rate rose from 36 to 52%.—F. L. M. DAWSON.

RICKARD, H. E., LUDWICK, T. M., HESS, E. A. & ELY, F. (1957). **Activation of bovine spermatozoa by the use of sodium carbonate.**—*J. Dairy Sci.* **40,** 203-208. **1613**

Semen samples stored at 37° to 39°C. showed better viability at pH 7·1–7·4 than at pH 6·5–6·8, but at 4° to 6°C. viability was better at the lower pH values. In a fertility trial, the 60–90 day non-return rates for semen activated by 0·5% sodium carbonate were 72·68% (first day—366 cows) and 70·33% (second day—300 cows) compared with 72·02% (547 cows) and 60·34% (595 cows) for the control semen.

—F. L. M. DAWSON.

KRISHNA RAO, C. (1957). **Differential staining of spermatozoa.** — *Brit. vet. J.* **113,** 323-328. **1614**

The author carried out differential staining of avian spermatozoa, the head taking primary nuclear stain while the acrosome, neck, and tail took the secondary cytoplasmic stain. About 32 stains in all were evaluated, also on buffalo and bull semen. Acetocarmine counter-stained with fast or acid green or with night or Victoria blue proved among the most satisfactory combinations.—F. L. M. DAWSON.

CLARKE, E. W. & ROTHSCHILD. (1957). **Anaerobic heat production of bull spermatozoa.**—*Proc. roy. Soc. Ser. B.* **147,** 316-331. **1615**

By using a micro-calorimeter, the anaerobic heat production of bull spermatozoa was estimated to be about 220 millicalories/10^9 live spermatozoa/hour during the first hour of incubation at 37°C. This heat was probably derived from the breakdown of fructose to lactic acid. Measurements were also made of the heat production of spermatozoa killed or inactivated by various methods, of seminal plasma, and of the heat of partial neutralization of seminal plasma by lactic acid.—R.M.

LOVERN, J. A., OLLEY, J., HARTREE, E. F. & MANN, T. (1957). **The lipids of ram spermatozoa.**—*Biochem. J.* **67,** 630-643. [Abst. from authors' summary.] **1616**

Aldehydogenic lipids, possibly plasmalogens, were major components (about 55–60%)

of the lipids in the spermatozoa. Choline was the predominating base of these particular compounds, although there were minor amounts of ethanolamine. The behaviour towards hydrolytic agents was, however, not that to be expected from the accepted plasmalogens. There was no evidence for the presence of lecithin. Other components of the extracts were free cholesterol (about 8%), hydrocarbons (about 2%), probably sphingomyelin (about 5·5%) and other lipids difficult to characterize, but perhaps including wax esters and glycerides. Despite the purifications employed, non-lipids appeared to be present in appreciable amount, possibly combined with the lipids.

HIGNETT, P. G. (1957). **The general examination of the bull for soundness with special reference to the assessment of fertility.**—*Vet. Rec.* **69,** No. 49. Pt. 2. pp. 1140-1146. Discussion: pp. 1147-1149. [Abst. from author's summary.] **1617**

In a paper intended to give help and guidance to the non-specialist working on the farm, H. discussed the meaning of "soundness" as applied to the bull and outlined briefly the procedure to be adopted in examining a bull. He emphasized the difficulties of obtaining representative semen samples and the great care which must be exercised in this respect. He discussed briefly some of the more commonly used tests of semen quality and the evidence for their value as predictors of fertility. He presented some 60 references, considered to be those of greatest practical application. He discussed the impracticability of applying results obtained with insemination bulls to semen from bulls used for natural mating, but the previously suggested criteria for fertile semen seem to have proved generally satisfactory. He suggested that, under British conditions, there should be two sets of criteria, one for dairy bulls and one for bulls of the beef breeds.

ROWLANDS, I. W. (1957). **Insemination of the guinea-pig by intraperitoneal injection.**—*J. Endocrin.* **16,** 98-106. [Author's summary modified.] **1618**

Insemination by i/p injection resulted in a high conception rate in g.pigs. The proportion that become pregnant increased from 0 to 100% when the number of spermatozoa inseminated was increased over the comparatively narrow range of $3{\cdot}0 \times 10^7$–$5{\cdot}0 \times 10^7$. The conception rate was high in animals inseminated between 0 and 16 hours after the end of oestrus; all animals (17) inseminated with more than $5{\cdot}0 \times 10^7$ spermatozoa during the first half of this period became pregnant. The incidence of pregnancy was very low in those inseminated i/p during oestrus and at upwards of 18 hours thereafter. The temporal relation between successful insemination and ovulation was the reverse of that obtaining in mated animals or after intravaginal insemination [Blandau & Young, 1939]. Fertility, determined by an estimate of the fertilization rate, by the number of foetuses *in utero* and the rate of foetal development, was similar to that following mating. Reasons for the failure of fertilization in animals inseminated i/p during oestrus are discussed.

BLAIR, G. W. SCOTT & GLOVER, F. A. (1957). **More early pregnancy tests from studies of bovine cervical mucus.**—*Brit. vet. J.* **113,** 417-423. **1619**

Blair and Glover's apparatus for critical measurements of cervical mucus is now commercially available. 163 empty and 118 [apparently] pregnant cows were tested, accuracy at 4 weeks reaching 92%. 5% of unserved cows gave false positive results; 9–25% (according to interpretation) gave results indicative of early foetal death, which was commoner in Friesians than in Shorthorns. It was found necessary to use a different "end-point" for each breed and the authors admit that climate and management variations are likely to complicate interpretation.

The Papanicolau type test, on the same samples, gave 81% true positive results at the 18–19th day of pregnancy but was only 78% accurate on empty cows. [This is a valuable research tool, but an experienced operator can diagnose pregnancy rectally at 4 weeks, with accuracy approaching 100%.]

—F. L. M. DAWSON.

VARENIKA, N. (1957). **[Ovarian function in cows.]**—*Vet. Glasn.* **11,** 649-654. [In Serbian. German summary.] **1620**

Details were given of a study of ovarian function in 176 cows which were examined regularly. Ovulation was observed 934 times in the right, 586 times in the left and 20 times simultaneously in both ovaries. There was no relationship between age and alternate function of ovaries. Whether the ovum originated from the left or right ovary had no influence on the sex of the offspring.—E.G.

OLDS, D. & VANDEMARK, N. L. (1957). **Physiological aspects of fluids in female genitalia with special reference to cattle—a review.**—*Amer. J. vet. Res.* **18,** 587-602. **1621**

336 references are listed. Endocrine control of uterine cellular activity is summarized mainly

in terms of work on rats. In various laboratory animals, oestrogens stimulate glycogen deposition in uterine tissue, but its release is influenced by progesterone. Lipid in the epithelium during dioestrus is under luteal control. Vaginal and uterine pH rises during oestrus in the cow and mare and in infection. Most work on oviduct fluid has been done with sheep. The follicular fluid of other species has been quantitatively assayed for oestrogens. The evidence on the effect of high hyaluronidase on fertility is very conflicting. [The sections on sex hormone relationship to uterine infection potential, and on the incidence of histopathological lesions in the genital tract of the cow, appear to be based on an insufficiently critical and incomplete scrutiny of the literature.]—F. L. M. DAWSON.

DOW, C. (1957). **The cystic hyperplasia-pyometra complex in the bitch.**—*Vet. Rec.* **69,** 1409-1414 & 1415. [Author's summary modified.] **1622**

A survey of 100 cases of the pyometra complex is given with the following subdivision on a histological basis:— Type I.—uncomplicated cystic hyperplasia (23 cases). The mean age was $7{\cdot}1 \pm 2{\cdot}4$ years and the lesion was present at all stages of the cycle. The only symptom was a mucoid discharge during metoestrus. Type II.—diffuse plasma cell infiltration superimposed on cystic hyperplasia of the endometrium (17 cases). Vaginal discharge was the only consistent symptom. The mean age was $7{\cdot}2 \pm 1{\cdot}9$ years and the lesion was found between 40 and 70 days post-oestrus. Slight leucocytosis was present. Type III.—acute endometritis superimposed on cystic hyperplasia (49 cases). These animals were clinically ill, the degree of illness varying with the distension of the uterus and the extent of myometrial reaction. The average age was $8 \pm 2{\cdot}2$ years and the lesion occurred 30 ± 14 days after oestrus. There was a leucocytosis with counts of 19,000 to 145,000 per cu. mm. Type IV.—chronic endometritis (11 cases). The degree of illness varied inversely with the patency of the cervix. The average age was $11{\cdot}8 \pm 1{\cdot}7$ years and the lesion was found between 55 and 80 days post-oestrus. Total w.b.c. counts varied from 16,000 to 68,000 per cu. mm. A review of methods of treatment and of the aetiology is given. D. reported the experimental reproduction of the first 3 types of the cystic hyperplasia-pyometra complex. The work is still in progress and will be reported in detail later.

HORGER, L. M. & ZARROW, M. X. (1957). **Certain endocrine aspects of the anaemia of pregnancy in the rabbit.**—*Amer. J. Physiol.* **189,** 407-411. **1623**

The anaemia of late pregnancy in the rabbit was normochromic and normocytic and appeared to be due to haemodilution. From experiments with sex hormones it was concluded that, although oestrogen and progesterone may be important in the fluid metabolism of pregnant females, they were not the sole causal agents of pregnancy anaemia.—R.M.

DAVIES, D. V., MANN, T. & ROWSON, L. E. A. (1957). **Effect of nutrition on the onset of male sex hormone activity and sperm formation in monozygous bull-calves.**—*Proc. roy. Soc. Ser. B.* **147,** 332-351. **1624**

Restriction of food intake delayed the onset of fructose and citric acid secretion in the semen, and delayed to a lesser extent the appearance of spermatozoa. The inhibition of fructose and citric acid was probably due to inhibition of secretory function of the seminal vesicles, caused by inadequate stimulation of the gonads by gonadotrophic hormone. Injections of this hormone elicited a prompt appearance of fructose and citric acid in the semen. Changes in semen composition caused by underfeeding were accompanied by histological changes in the testicle and accessory organs. Underfeeding retarded the differentiation of the seminiferous tubules and the intersitial tissue in the testicle.—R.M.

EMMENS, C. W. (1957). **Some properties of methylethylstilboestrol.** — *J. Endocrin.* **16,** 148-155. [Abst. from author's summary.] **1625**

Some properties of the pro-oestrogen, methylethylstilboestrol (4 : 4' - dihydroxy - α - methyl-β-ethylstilbene) were studied in intravaginal tests with ovariectomized mice, using diethylstilboestrol as control. The results show that the slope of the dose-response line is steeper and cornification occurs later with the pro-oestrogen, while correlation between the responses of individual mice to the two substances is small. In all these respects, the behaviour of the intravaginally-administered pro-oestrogen resembles that of an injected oestrogen.

GORDON, I. (1958). **Hormones and sheep fertility. 2. Out-of-season breeding.** — *Agric. Rev., Lond.* **3,** 12-17. **1626**

G. reported the results of experiments performed at Cambridge on induction of oestrus in ewes in April by injections of progesterone followed by pregnant mare's serum. About 54% of treated ewes conceived after natural or artificial insemination. The possibility of breeding from ewes twice a year was discussed.—R.M.

VARADIN, M. (1957). Izazivanje estrusa i pokušaj oplodnje ovaca u periodu anestrusa. **[Stimulation of oestrus and fertilization of ewes during anoestrus.]**—*Veterinaria, Sarajevo* **6,** 346-353. [In Croat. English summary.] **1627**

Of 148 anoestrous ewes treated with up to three s/c doses each of 1300 mouse units P.M.S., at intervals of 14 days, 96 came into oestrus, and 40 of these became pregnant after insemination. Of these one aborted, four produced stillborn lambs and one ewe died. The remaining 34 ewes produced 46 lambs. None of the ewes, however, which came into oestrus after only one dose of P.M.S. conceived. The highest percentage of pregnancies was obtained by insemination after inj. of two doses of P.M.S. The author stressed that gonadotrophins may be used for the stimulation of oestrus in the control of sterility but not for the production of lambs twice a year.—E.G.

DAWSON, F. L. M. (1957). **Bovine cystic ovarian disease—a review of recent progress.** —*Brit. vet. J.* **113,** 112-133. **1628**

It is generally agreed that two forms of bovine cystic ovarian disease occur—one associated with adrenal virilism, the other a true nymphomania. In the former fuchsinophile granules are present in the adrenal tissue and there is a great increase in the excretion of androgens in the urine. Cysts, which may contain luteal tissue in their walls, are present in the ovaries, though not invariably. There may be external evidence of masculinization and masculine behaviour. In nymphomania, there is anterior pituitary and adrenal hypertrophy, accompanied by a reduced secretion of neutral steroids in the urine. The follicular cysts show active oestrogen secretion with hypertrophy of the theca-interna and granulosa and there is at times a hyperoestrinaemia. The proportion of virilism cases to active nymphomaniacs is about 1 to 4, but intermediate cases occur in which masculinizing effects co-exist with oestrogen production. A tendency to develop cystic ovarian disease is inherited, but it is a failure of nutrition, possibly the mineral-vitamin balance, which precipitates the pathological changes in the ovary. Manual rupture of cysts and luteinizing hormone administration (1,000 i.u. intravenously) can both be effective forms of treatment.

ROBERTS, S. J. (1957). **A preliminary report on the treatment of cystic ovaries in dairy cattle by the injection of gonadotropic hormones directly into the follicular cyst.**—*J. Amer. vet. med. Ass.* **131,** 510-513. [Author's summary modified.] **1629**

Two techniques for the injection of luteinizing hormone into cystic follicles are described, *i.e.*, the vaginal approach, and the insertion of a long needle through the ischiorectal fossa. There was no clinical or P.M. evidence of any significant damage or injury produced by tapping cystic ovaries with a fine gauge needle and injecting a gonadotropic hormone. Preliminary results indicate that this mode of therapy for cows with cystic ovaries may be practical since small doses of gonadotropic hormones, when injected into the cystic follicles, produced a satisfactory recovery rate. Encouraging results with this mode of therapy have been observed in a limited number of cows with cystic ovaries that failed to respond to the i/v or i/m inj. of a luteinizing hormone.

MCCLURE, T. J., DUN, R. J. & DYSART, T. H. (1957). **Treatment of a herd with a breeding problem by attempting to express corpora lutea.**—*N.Z. vet. J.* **5,** 37-38. **1630**

Over a period of two years, during which the conception rate to first service fell to 23% from a normal mean of 65%, corpora lutea were expressed from 41 non-pregnant cows and 27 showed an induced oestrus within 7 days. Only 35% conceived to service during this oestrus, a rate considered equivalent to that prevailing in the absence of treatment. [No particulars are given of the cause of the infertility.]

—F. L. M. DAWSON.

BOUCKAERT, J. H. & VANDEPLASSCHE, M. (1957). Comite voor steriliteitsbestrijding veeartsenijschool — Ghent. Verslag ores het werkjaar 1956. **[Committee for the Control of Sterility, Ghent. Report for the year 1956.]** — *Vlaam. diergeneesk. Tijdschr.* **26,** 52-60. [English summary pp. 60-63.] **1631**

At the Veterinary School in Ghent 206 heifers and cows, 163 bulls, 49 mares, 6 stallions and 7 boars were examined for sterility during 1956. A purulent infection of the genital system of heifers aged 6–9 months was investigated on three farms and was found to be associated with pleuropneumonia-like organisms. When these heifers were served at 18–24 months of age the conception rate was very poor, but infertility was not permanent. Other investigations were the effect of lorry transport on blood picture and ovarian function in gilts; influence of heredity on puberty in gilts; fertility of cows after caesarian section.

From studies of vibriosis it was found that infection was not spread by contact from infected bulls to healthy bulls housed together for

4 months; an effective treatment was oxytetracycline–streptomycin ointment applied to the penis under epidural anaesthesia; *V. fetus* was eliminated from the uterus of artificially infected cows after 6 weeks but persisted in the vagina for 8 months; cows were treated by intra-uterine infusion of 2 g. streptomycin with 60 ml. polyethylene glycol; one of two heifers aborted after being served by an infected bull during the 2nd–3rd month of pregnancy. A. Huysman studied histologically the course of *V. fetus* infection of the endometrium. Florent proposed a new classification of vibrios into three groups: I. *Vibrio fetus,* further subdivided into (a) venereal type (causing sterility and abortion) and (b) abortion type (causing sporadic abortion); II. *V. bubulus;* III. Other, non-pathogenic, vibrios.—R.M.

GROOTENHUIS, G. (1956). Een statisisch onderzoek betreffende de voortplantingsstoornissen bij het paard. **[Statistical study of reproductive disturbances in the horse.]**—*Thesis, Utrecht* pp. 168. [English summary.] **1632**

G. recorded detailed data of the breeding histories of 10,545 mares of various breeds in the province of Drenthe. He discussed factors influencing the fertility of mares and mortality in their foals. [See also *V.B.* **27,** 222.].—R.M.

VANDEPLASSCHE, M. (1957). Die symptomlose Unfruchtbarkeit bei unseren Haustieren. **[Asymptomatic sterility in domestic animals.]** — *Wien. tierärztl. Mschr.* **44,** 449-461. [English, French and Italian summaries.] **1633**

Causes of asymptomatic sterility include: follicular atresia, delayed ovulation, oestrogen-progesterone imbalance, early foetal death (which appears to be closely associated with a high milk yield), and functional infertility. —F. L. M. DAWSON.

KINGREY, B. W., LADWIG, V. D., MONLUX, W. S. & RAMSEY, F. K. (1957). **Pregnancy disease of cows.**—*N. Amer. Vet.* **38,** 321-322 & 328. **1634**

All ten twin-pregnant cows in a herd of 263 Herefords sickened and died within a month of term, despite treatment successful in clearing the ketonuria which was the most pronounced symptom. The disease showed many features recalling ewe pregnancy disease, and is similarly attributed to the demands of multiple pregnancy when exercise is minimal and carbohydrate intake low.—F. L. M. DAWSON.

VAN 'T HOOFT, A. J. G. (1957). Een erfelijke afwijking bij runderen. Voorlopige mededeling. **[A hereditary defect of the hooves and tongue of cattle. Preliminary communication.]**—*Tijdschr. Diergeneesk.* **82,** 391-393. [English, French and German summaries.] **1635**

Lesions resembling those of F. & M. disease were observed on the tongue and hooves of calves of the Meuse-Rhine-Yssel breed. The defects were first noticed at 2 or 3 months of age. There was evidence that the condition was inherited [no details given].—R.M.

LORD, L. H., CAWLEY, A. J. & GILRAY, J. (1957). **Mid-dorsal dermoid sinuses in Rhodesian Ridgeback dogs—a case report.** — *J. Amer. vet. med. Ass.* **131,** 515-518. [Authors' summary copied *verbatim.*] **1636**

The hereditary occurrence of dermoid cysts in the cervical and coccygeal areas of Rhodesian Ridgeback dogs is reported. A Canadian-bred Rhodesian Ridgeback that developed complications of a dermoid sinus was successfully treated by radical excision and appropriate antibiotic therapy.

FANKHAUSER, R. (1957). Bildungsstörungen des Kleinhirns. **[Disturbances in the formation of the cerebellum.]**—*Dtsch. tierärztl. Wschr.* **64,** 225-230. **1637**

An illustrated account, including reference to F.'s own cases of cerebellar atrophy in 6 calves, 6 cats and 2 dogs.—R.M.

See also absts. **1330** (abortion in a cow caused by E. monocytogenes); **1335** (seminal retention and epididymitis in goats); **1370** (leptospiral abortion in mares); **1380-1383** (vibriosis); **1406** (effect of furazolidone on avian fertility); **1424** (growth of equine abortion virus in tissue culture).

ZOOTECHNY

FENTON, B. K., ELLIOT, J. & CAMPBELL, R. C. (1958). **The effects of different castration methods on the growth and well-being of calves.** — *Vet. Rec.* **70,** 101-102 & 103. [Authors' summary modified.] **1638**

76 calves were allocated to three groups for castration by the "Burdizzo," "Elastrator," and "Open" methods. 8 calves were left uncastrated as controls. The physical changes and weight gains of the calves in each group were recorded weekly for 6 weeks. Statistical analysis revealed significant differences in growth rate between castrated and uncastrated animals. A very significant difference in growth rate between

the animals in the "Elastrator" group and the other groups was recorded in the fourth week after castration. The difference coincided with the more prolonged period of pain and sepsis which is characteristic of this rubber-ring method.

I. HENNEMAN, H. A., RUST, R. E. & MEITES, J. (1957). **The effect of steroid hormones on fattening lambs.**—*J. Anim. Sci.* **16**, 283-293. **1639**

II. TAYLOR, B., HALE, W. H. & BURROUGHS, W. (1957). **Growth and fattening stimulation in ewe lambs by certain androgenic and estrogenic compounds.**—*Ibid.* 294-306. **1640**

I. Implants of progesterone plus 10 mg. oestradiol caused an increase in weight gain and in the daily feed intake and had no adverse effect on the carcass grade if the lambs were slaughtered after a long enough period on feed (28 or 42 days after implantation). If, however, the lambs were slaughtered as soon as the desired weight and "finish" were attained carcass weight and grade were significantly lower. There was a tendency to a high moisture content in the fat. Better results were obtained with 100 mg. than with 250 mg. progesterone. Similar results were produced by 50 mg. testosterone plus 10 mg. oestradiol but there was more restlessness among the animals. Daily feeding of 3 mg. stilboestrol produced no significant improvement over progesterone-oestradiol implants. Hormone treatment caused hypertrophy of the secondary sex organs in wethers and development of the mammary glands in both wethers and ewes; signs usually associated with age were observed in the carcasses of treated lambs at slaughter.

II. Results of treatment with testosterone propionate were inconsistent. Methyl testosterone fed at 8·4 or 42·9 mg. daily caused a significant increase in weight gain but the higher dose had no effect in subsequent trials. When weight gains ensued carcass grade was higher in the case of lambs on the higher level of methyl testosterone than those on propionate. The propionate had no effect on the size of the uterus and ovaries but it tended to increase the weight of the ovaries and the number of developing follicles. An implant of 250 mg. progesterone and 10 mg. oestradiol significantly increased weight gains, improved feed efficiency and increased consumption of maize but not of total feed; carcass grades were significantly lower and there was increased sexual activity: the uterus increased significantly in size, the follicles were reduced in size and number and the ovaries were not affected. Stilboestrol caused significant weight gains only at 3·5 mg. daily, at which level it was not well tolerated. At 2 mg. it had little or no effect on weight gains and carcass grade was lowered, though not significantly, by either dose. The size of the uterus increased, the ovaries decreased in size and follicle development was retarded.—T.E.G.R.

TECHNIQUE AND APPARATUS

FARRAR, J. T., ZWORYKIN, V. K.& BAUM, J. (1957). **Pressure-sensitive telemetering capsule for study of gastrointestinal motility.**—*Science* **126**, 975-976. **1641**

A plastic capsule 3 cm. long and 1 cm. diameter contained a transducer capable of measuring changes in pressure within the range 0–50 cm. water, and a very small battery-powered radio transmitter. Recordings of pressure changes in the stomach and intestines, after the capsule had been swallowed, were obtained by an oscilloscope connected to a radio receiver. The life of the battery was 15 hours. This method interfered less with normal movements of the stomach and intestines than methods using balloons connected to tubes.—R.M.

See also absts. **1388** (vital staining of bacterial cultures); **1413** (F. & M. disease virus tissue culture); **1418-1419** (rabies tissue culture); **1424** (growth of equine abortion virus in tissue culture); **1435** (cultivation of panleucopenia virus in tissue culture); **1436-1437** (propagation of myxoma virus in tissue culture).

MISCELLANEOUS

PEEBLES, T. F. & DE BAKKER, G. (1957). **Index of Agricultural Research Institutions in Europe. Vols. I. & II.** Vol. I. pp. 205. Vol. II. pp. 201. Rome. Food and Agriculture Organization of the United Nations. Revised. [Introduction in English, French and Spanish.] **1642**

This lists the addresses and names the directors of research institutes in Europe, excluding Communist countries except for Yugoslavia. Within each country the institutes are classified according to the subjects they deal with: veterinary science is one of the subject headings. There has been difficulty in defining research institutes, for the colleges and universities are given for some countries and not for others, *e.g.* United Kingdom.—R.M.

REPORTS

GREAT BRITAIN. (1956). **Royal Veterinary College Annual Report 1st October, 1955 to 30th September, 1956.** pp. 39. London: The Royal Veterinary College. **1643**

In October 1955 there were 325 students at the College and during the year 50 students qualified. Research in progress was described. It included the following subjects: cystic degeneration of the ovaries in cattle, castration of calves, paraplegia in pigs and dogs, and inherited blindness in cattle.—R.M.

CANADA. (1957). **Report of the Veterinary Director General for the year ended March 31, 1956.** [WELLS, K. F.] pp. 33. Ottawa: Edmond Cloutier. **1644**

No new serious animal diseases were diagnosed in Canada during the fiscal year 1955–56 and the universal acceptance of Canadian livestock and livestock products has been made possible through the constant vigilance of the Health of Animals Division.

The Contagious Diseases Section reports:—advances made in bovine TUBERCULOSIS control; the discussion and formulation of a plan for a National Control Program for BRUCELLOSIS; the serious concern over an outbreak of RABIES in Ontario and the dog vaccination programme; the identification of the neurotropic disease—SCRAPIE—of sheep in one flock, and the handling of other notifiable diseases of less severity, *e.g.* MANGE, ANTHRAX, NEWCASTLE DISEASE, FOWL TYPHOID etc.

The Meat Inspection Section reports a growing demand for services and an increase of five (from 145 to 150) packing plants operating under the Meat and Canned Foods Act. An over-all increase of 22·66% of inspected slaughterings over the previous year is noted. This includes a rise in poultry slaughtering of 36·99% and an increase in swine slaughter of 15·89%, with only a slight decrease of 0·19% in horse slaughtering.

Each section gives in detail statistics pertaining to their respective activities and observations. The continued acute shortage of professional help seriously hampers the extension of activities.—R. V. L. WALKER.

NIGERIA. (1957). **Annual report of the Veterinary Department of the Northern Region of Nigeria, 1954-55.** [MACLENNAN, K. J. R.] pp. 37. Zaria: Gaskiya Corporation. **1645**

The year was notable for the gradual extension of the Department and a widening of its activities. RINDERPEST was kept under control by mass inoculation of 891,176 head of cattle against 804,982 the previous year. The death rate 3,588, was the lowest ever recorded. The dried goat virus vaccine was not entirely satisfactory and needs further research although it was the vaccine most used. The wet goat virus vaccine is rapidly falling into disuse.

The control of BOVINE CONTAGIOUS PLEUROPNEUMONIA has been more successful than for many years, the number of outbreaks being 157. The chief measures used were rapid and accurate diagnosis, strict quarantine and the immediate slaughter of all clinical cases.

TRYPANOSOMIASIS in cattle still causes many difficulties for the veterinary staff. BLACKLEG is the most serious bacterial disease and is endemic in many areas. ANTHRAX and HAEMORRHAGIC SEPTICAEMIA caused only slight inconvenience, but BRUCELLOSIS has still been given too little attention. The incidence of TUBERCULOSIS is not known and a tuberculin testing programme had to be abandoned owing to a shortage of staff.

Although only 14 outbreaks of FOOT AND MOUTH DISEASE were reported the disease appears to be more prevalent and more virulent. Control by quarantine and slaughter are impracticable.

Numerous tables are given dealing with animal industry and trade in cattle and a special report is included on the trypanosomiasis and tsetse fly control unit. This unit first took shape in 1954 and now consists of one senior veterinary officer, and two entomologists along with 44 other staff. TRYPANOSOMIASIS is the greatest single impediment to the stock raising industry in Northern Nigeria.

The field work has been of the following categories:— general survey of areas in the southern part of Northern Nigeria, detailed surveys of specific areas for observation purposes, and detailed surveys in the vicinity of specific livestock projects. From October 1954 to March 1955, eighteen separate maps were prepared showing the results of these surveys.

—D. S. RABAGLIATI.

NIŽNÁNSKY, F. (1957). Výsledky činnosti Štátneho vedeckého veterinárneho ústavu v Bratislave za r. 1956. **[Report of the Czechoslovak State Veterinary Institute at Bratislava for 1956.]**—*Vet. Čas.* **6**, 279-292. [In Slovak. English, French, German and Russian summaries.] **1646**

During the period under review 556,081

samples from cattle, 13,141 from pigs, 21,008 from sheep, 1,461 from horses and 523 from man were examined for BRUCELLOSIS at the institute. 0·65% of those from cattle, 3·95% from pigs, 0·30% from sheep, 2·24% from horses and 27·7% from man yielded either positive or doubtful reactions. The causal agent of ovine EPIDIDYMITIS was identified as *Br. intermedia*. BRUCELLOSIS was also diagnosed in wild hares. Incidence of *Salmonella cholerae-suis* infection in pigs was nearly 9% in some districts, incidence of *S. pullorum* infection in fowls was similar. EQUINE INFECTIOUS ANAEMIA was diagnosed in 9 horses. 79 c.n.s. samples were examined for RABIES and only one sample, from a heifer, was positive. MYXOMATOSIS did not occur during 1956. HELMINTH INFESTATION was on the increase—E.G.

BOOK REVIEWS

METCALF, R. L. [Edited by.] (1957). **Advances in pest control research. Vol. I.** pp. vii + 514. New York (& London): Interscience Publishers, Inc. $11.00. **1647**

This is the first volume of a new "Advances" series. The editor defines pests as any of man's competitors, but the contents of this volume are limited to two papers on herbicides, two on fungicides, one each on biological assay and chemical analysis, and the following on insecticides:— Control of health hazards associated with the use of pesticides, by J. M. Barnes; Use of radioactive isotopes in pesticide research, by P. A. Dahm; The chemistry and action of organic phosphorus insecticides, by T. R. Fukuto; Repellents for biting arthropods, by G. F. Shambaugh and others.

The paper by Barnes is mainly concerned with the toxicity of insecticides for human beings. Dahm discusses the use of radioactive isotopes for the labelling of insecticides and also insects, mites and ticks. Fukuto's review is devoted to the nature of the enzymes inhibited by organic phosphates and the mechanism of this inhibition; the relationship between chemical structure and activity; the metabolism of organic phosphates in biological systems.—R.M.

WRIGHT, C. A. (1957). **A guide to molluscan anatomy for parasitologists in Africa.** pp. 20. London: British Museum (Natural History). 1s. 6d. **1648**

Because the identification of some species of snails depends on the anatomy of the internal organs, W. has prepared this dissection guide for use by medical and veterinary parasitologists. Three types of snail are described: *Lymnaea natalensis, Bulinus globosus* and *Biomphalaria pfeiferi*. This booklet concentrates on dissection technique and the basic anatomical features; it does not provide a key to identification, but gives references to keys.—R.M.

GREENFIELD, J. G., SHY, G. M., ALVORD, E. C., JR. & BERG, L. (1957). **An atlas of muscle pathology in neuromuscular diseases.** pp. ix + 104. Edinburgh (& London): E. & S. Livingstone Ltd. 45s. **1649**

Having posed the questions: "What are the fundamental reactions of muscle to disease?" and "With what clinical entities are these reactions associated?" the authors attempted to provide the answers by independently studying biopsy samples of muscle from 133 human cases of neuromuscular disease, comparing and collating notes and, only then, considering the clinical aspects. This book is the result. Part I deals with the reaction patterns of muscle tissue. In part II the histological features are correlated with the clinical. As the book is an atlas the text has been kept to the absolute minimum, especially in part I where numerous photomicrographs, many of them in colour, are made to carry the main burden. These and the art paper they necessitate doubtless account for the high price of the book; but they are of high quality.

The authors have obviously and deliberately limited the scope of their investigation to certain aspects of a relatively small number of cases. The result justifies their approach, for it is a most useful book which will provide a sound basis for a more general study of muscle disease.

—L. M. MARKSON.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

NEMESÉRI, L. & HOLLÓ, F. (1957). Állatorvosi parazitológiai diagnosztika. **[Diagnosis of parasitic diseases of domestic animals.]** pp. 247. Budapest: Mezögazdasági Kiado. Ft. 32. [In Hungarian.]

PRÉVOT, A. R. (1957). Manuel de classification et de détermination des bactéries anaérobies. **[Manual of classification and determination of anaerobic bacteria.]** pp. 362. Paris: Masson et Cie. 3rd Edit. Fr. 2500.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey Surrey.

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ERRATA

V.B. **28**, No. 4, abst, 1296. In lines 10 and 11 the figures given for horses are incorrect and should read:— 1,098,000 horses (compared with 1,542,000 in 1938).
No. 5, abst. 1562. The last sentence should read as follows:— Sheep were killed with 0·04—0·05 g./kg. of sodium edetate.

ABBREVIATIONS OF NAMES OF PUBLICATIONS

The abbreviations used in *Index Veterinarius* and *The Veterinary Bulletin* are those of the *World List of Scientific Periodicals published in the years* 1900-1950, 3rd Edit. (1952), London: Butterworths Scientific Publications.

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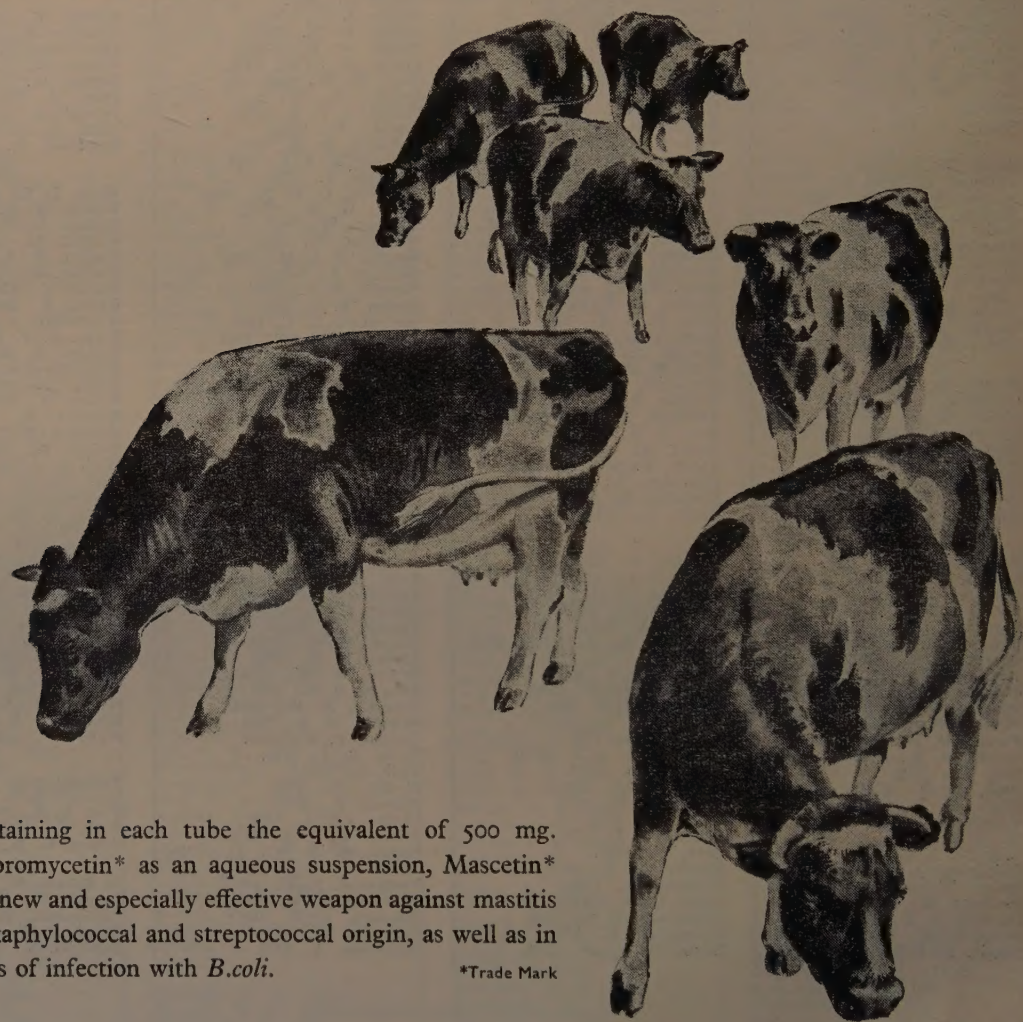

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